Chapter 21 Initial Environmental Examination (IEE)

21.1 Purpose and Structure of IEE

General purpose of IEE is to identify the potential environmental impacts on the surroundings and its degrees, which are caused by the execution of the project.

The results of IEE are significant information for the selection of the suitable sites of project in terms of environmental considerations.

Taking account of a requirement of the Ministry of Science, Technology and Environment (MOSTE) on the structure of EIA report, potential environmental impacts on the surroundings and its degrees were examined in the three project stages such as Pre-construction, Construction and Operation Stage.

21.2 Result of IEE

21.2.1 IEE Check List

Based on the collected information on the social and natural environmental conditions described in the Chapter 4, potential environmental impacts at three sites that have been selected in the Master Plan stage (shown in Figure 21.1.1) are listed up and examined qualitatively in the IEE Check Lists as shown in Table 21.2.2.

The total number of each mark indicating the degree of the impacts in the IEE Check Lists are summarized in Table 21.2.1.

Table 21.2.1 Summary Table of IEE Check Lists

Site / Mark	Thi Vai Site	Lower Cai Mep Site	Ben Dinh-Sao Mai Site
0	6	12	3
+	27	20	18
++	5	7	15
+++	1	0	3

Note: 0: Slight effect +: Moderate effect ++: Medium effect +++: Severe effect

It is noted that the mangrove forests in the planned port areas at Thi Vai and Lower Cai Mep Sites shall be deforested for the cargo handling yards. They are, however, located in the Industrial Zone where development activities are admitted by the government regulations.

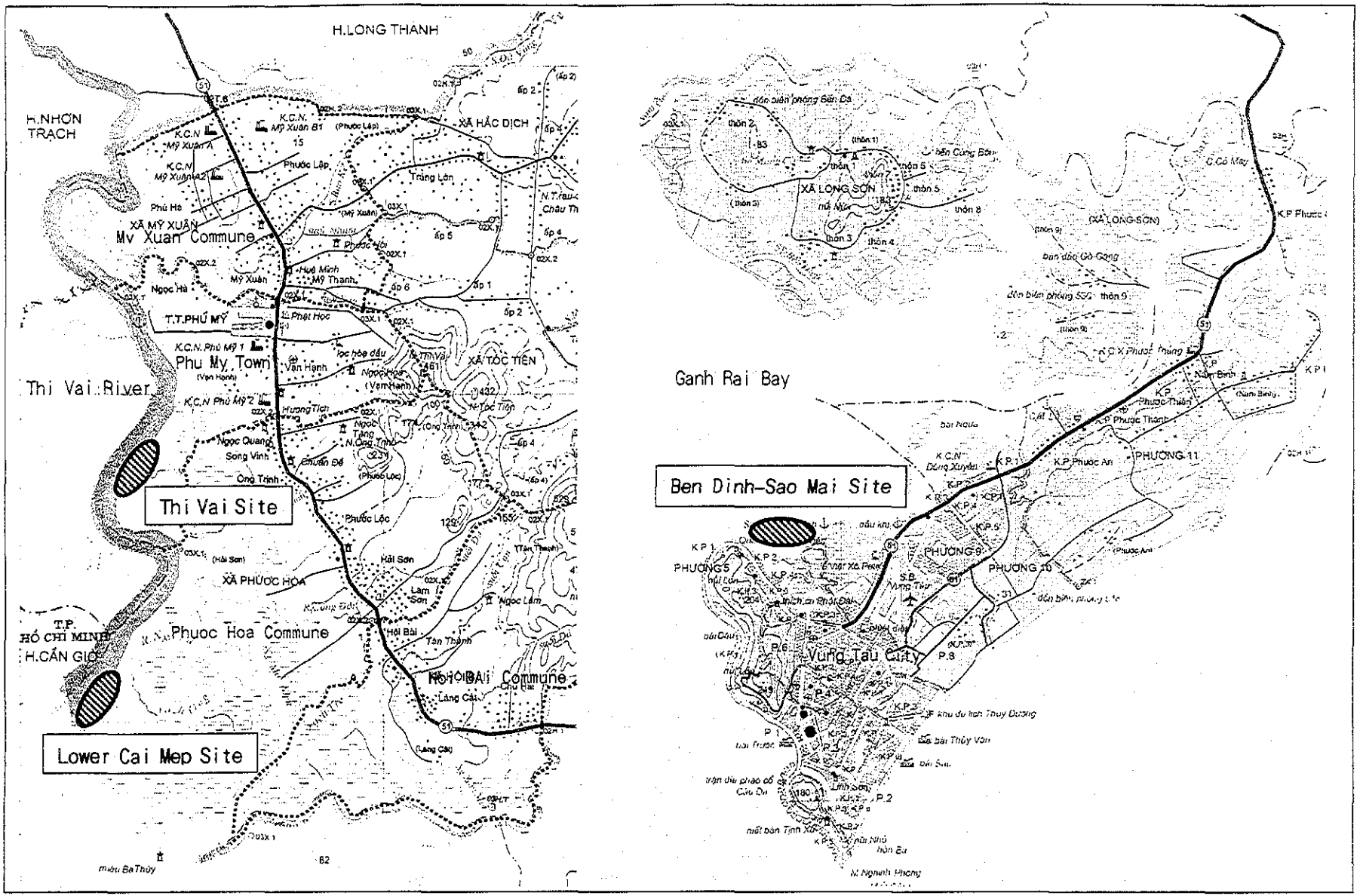


Figure 21.1.1 Location of the Three Possible New Port Development Sites Selected in the Master Plan

Table 21.2.2 IEE Check List (1)

Factors	Impacts	TV Site	LCM Site	BDSM Site	Remarks
A. PRE-CONSTRUCTION STAGE					
Clearing Site and Taking Place	Relocation of local inhabitants	0	0	+++	Widening of existing road
	Regional segmentation	0	0	+	Widening of existing road
	Loss of agriculture field	+	+	+	Mainly rice field
	Loss of aquatic firming field	0	+	0	Mainly shrimp pond
	Loss of fishing field	0	+	+	Mainly coastal field
	Loss of ecological system	+	++	+++	Reclamation of mud land
B. CONSTRUCTION STAGE					
Dredging of Channel	Change of bathymetry	+	+	++	Change of water current
	Increase of salt intrusion	+	+	0	Narrowness of river width
	Increase of turbidity in dredging and dumping sites	+	+	++	Effect on Fishing and recreation activity and local eco-system
	Oil spillage from equipment	+	+	++	Dredging volume
	Water traffic hindrance	++	++	+	Narrowness of river width
Construction of Port Facility	Change of topography	++	++	+++	Hindrance of water circulation by reclaimed land area
	Dust, noise and vibration by construction activity	+	0	++	Distance from urban area
	Discharge of soil and construction materials with surface water	+	+	++	Extent and location of construction site
	Solid waste disposal (scrap, surplus materials, etc.)	+	+	+	Structure of port facility
	Water traffic hindrance	+	+	++	Location of construction site
	Land traffic hindrance	+	0	+	Distance from urban area
Construction of Related Road	Dust, noise and vibration by construction activity	+	0	++	Widening of existing road
	Discharge of soil and construction materials with surface water	+	+	+	Location of construction site
	Solid waste disposal (scrap, surplus materials, etc.)	+	+	+	Structure of road
	Land traffic hindrance	+	0	++	Widening of existing road
	Influence on local business activity	+	0	++	Widening of existing road

Note: 0: Slight effect +: Moderate effect ++: Medium effect +++: Severe effect

Table 21.2.2 IEE Check List (2)

Factors	Impacts	TV Site	LCM Site	BDSM Site	Remarks
C. OPERATION STAGE					
Port Operation Activity	Dust generated by activity	+	+	+	Dust from bulk cargo handling
	Discharge of handling materials with surface water	+	+	+	Discharge from bulk cargo handling
	Influence on local eco-system	0	++	+	Lighting and human waste discharge
	Increase of accidental oil spillage from storage facility to fuelling ships	+	+	+	Type of ships and handling volume
Increase of Water Traffic	Increase of accidental oil spillage due to ship collision	++	++	+	Narrowness of river width and location of port
	Increase of ship discharge such as oily ballast, bilge water and sewage water	++	++	++	Increase of water traffic density
	Erosion of water front area due to wave generated by ships	+++	+	0	Erosion of mangrove swamp
	Increase of water traffic accident	++	++	+	Narrowness of river width and location of port
	Destruction of local biology	+	+	+	Alien species transported by overseas ships
Increase of Land Traffic	Dust, emissions, noise and vibration	+	0	++	Distance from urban area and current local conditions
	Increase of land traffic accident	+	0	++	Population and local traffic density
	Interference of tourism and recreational activity	0	0	++	Location of current activities
Induced Industrialization and Urbanization	Increase of industrial discharge and emission	+	+	+	Type and concentration of industry
	Increase of human waste discharge	+	+	++	Increase of population density and extent of residential space
	Increase of commodities price	+	0	+	Distance from urban area and current local conditions
	Lack of infrastructures	+	+	++	Electric and water supply, road, sewage, etc.
	Deterioration of social order	+	0	+	Distance from urban area and current local conditions

Note: 0: Slight effect +: Moderate effect ++: Medium effect +++: Severe effect

21.2.2 Primary Features of Environmental Impacts

Considering the results of IEE, the primary features of the environmental impacts in the sites are as follows:

(1) Thi Vai Site

- Erosion of the mangrove forest

The mangrove forest in the Can Gio district, which is lying along the right bank of the Thi Vai River from its mouth toward the upstream, is eroded due to the waves generated by ships year by year. Increase of waterway traffic accompanied by the new port development, especially in the narrow upstream, may accelerate the erosion.

(2) Lower Cai Mep Site

- Destruction of natural resources

Even the area has been designated as the industrial area in and around the site, a large extent of mangrove forest remains with diverse biology. This may be injured by the partial reclamation of the area due to the interruption of the complex surface water exchange system. Especially, the reclamation of yard areas and the construction of access roads to connect National Highway No. 51 and the site may affect the eco-system unless appropriate mitigation measures are taken.

(3) Ben Dinh-Sao Mai Site

- Socio-economic environment at the site

Relocation of local inhabitants along the existing road No.51 may be necessary to cope with increase of port related traffic. Allergic reaction may arise among the inhabitants.

Vicinity of the site is one of the tourist attractions in the southern part of Vietnam, and Vung Tau city is more populated than other sites. Therefore, the factors accompanied by the new port development such as construction of factories, increase of port related traffic may have considerable adverse impact on the local environment. For example, the existing two-lanes road in the city cannot sustain ordinary traffic by addition of many tractor-trailers as long as 16 m in length.

- Adverse effect of dredging and reclamation

Comparing with other sites, required volume of dredging is quite large. This may result in negative impacts on the fishery activity in the coastal area such as the change in current speed and exchange of water mass, increase in turbidity by dredging and dumping works, etc.

The large extent of the mud-land will disappear by the reclamation work. This means the destruction of natural self-cleaning system (resolution system of organic pollutant into inorganic matter). In addition, there is a possibility of blockage of seawater circulation by the reclaimed land, which will accelerate the water pollution in front of the Vung Tau shipbuilding yard.

Benthos survey, which was conducted by the study team revealed that bio-diversity in Ben Dinh-Sao Mai site, is lower than that of Cai Mep site. In other word, eco-system in Ben Dinh-Sao Mai site could hardly receive further discharges directly from land area.

Considering the above primary features of the environmental impacts in the sites, the new port development in the Ben Dinh-Sao Mai site might have relatively higher degree of unfavorable impacts on local environments than those of other sites.

Chapter 22 Priority Port Development Project in Thi Vai – Vung Tau Area

The study on the priority port development project in Thi Vai and Vung Tau area focuses on the general cargo terminal for 50,000 DWT vessels and the container cargo terminal for 50,000 DWT and 80,000 DWT vessels.

22.1 General Comparison between Two Candidate Sites for the Deep Container Port

22.1.1 General Approach and Methodology

Considering the above conditions for the additional analyses, the following methodologies are adopted for the general comparison between two candidate sites.

1) The two-selected development schemes are the focus of the comparison study without any other alternative cases.
2) In the comparison, it is assumed that the container terminals at both sites, namely LCM and BDSM, would be developed with the same function and scale.
3) The components of the schemes to be compared include both quantifiable and non-quantifiable items.

22.1.2 Functions and Scale of Port

(1) Functions

The Study has identified three types of potential transshipment needs in Vietnam. These are
(a) International Transshipment on an ad hoc basis
(b) Domestic Transshipment from other Vietnamese ports
(c) Transit cargo along the on-going Trans-Asia Highway Project (Phnom Penh –HCMC)

The transshipment and transit container cargo is forecasted 135 thousands TEUs in 2010 and 267 thousands TEUs in 2020. In such a small amount of transshipment and transit cargo volume, the transshipment port need not be constructed independently. Therefore the international container transshipment port concept is not the best selection for this region at least in short/medium-term period in this region.

Table 22.1 Transshipment / Transit Container Traffic Demand in SFEA

(000 TEUs)

	2010	2020
International Transshipment	20	43
Domestic Transshipment	83	166
Cambodian Transit	32	59

Function of the container port for the comparison study are as follows:

The basic port function to be developed at the candidate sites is so-called "International Gateway Container Port (IGCP)" with the functions to:

1) Support overall socio-economic development of the south of Vietnam
2) Serve mainly for international container traffic to/from SFEA with some domestic container transshipment
3) Promote industrial location at the direct hinterland of the port
4) Alleviate excess river/land traffic in and around HCMC/Saigon ports area
5) Promote and regulate various development activities on the water front area of Thi Vai River
6) Minimize possible development impacts on natural and socio-economic environment

(2) Scale

The overall scale of port development and dimensions of major compornents are as follows.

1) Three container berths with the depth of –14m and two container berths with the depth of –16m including container handling yard.
2) Four lanes access road connecting NR.51.
3) Two-way approach channel with depth of –16m
4) Supper structures and container handling equipment necessary for handling more than 300,000TEU/year/berth

22.1.3 Evaluation of Each Component of the Project

The results of evaluation of each project component are as follows. It should be noted that the ratings on the evaluation items in the tables does not represent the absolute value of evaluation, since the ratings show only relative superiority of each item between two sites.

22.1.4 Overall Evaluation and Recommendations

On the basis of the above comparison study, the overall evaluation and recommendations can be summarized as follows.

(1) On the basis of above discussions and the comparison analyses made in this paper, it can be said that LCM site is more advantageous in general than BDSM site for development of IGCP type of container port at least in short/medium term range. (For details of function of "International Gateway Container Port", see section 2.1. of this paper)

(2) On a long-term basis, however, BDSM site would have a fairy high potential for future expansion of container port capacity, since the available space of LCM site is rather limited for further expansion of container terminal development (i.e. a maximum of four more berths could be developed).

Table 22.2.1 Quantifiable Components

Components	LCM	BDSM
Natural Conditions for Vessel Operation		
Meteorological Conditions (wind)	1	-
Hydraulic conditions (wave, current)	1	-
Natural Conditions for Structural design		
Subsoil Conditions	-	1
Topographic Conditions	1	-
Proximity for the Shippers and the Maritime Route		
Distance from major origin/destination of container traffic	1	-
Distance from trunk maritime route	-	1
Construction and Maintenance of the Project Components		
Initial Capital Dredging	1	-
Maintenance Dredging	0	0
Quay Construction	0	0
All Construction Cost	1	-
Economic Cost and Benefit	1	-
Investment Risk of BOT Based Development	0	0

superior(1) even(0)

Table 22.2.2 Non-quantifiable Components

Components	LCM	BDSM
General Character of the Sites		
General Character of the Sites	1	-
Natural Impacts		
Mangrove Forest	-	1
Dredging and Reclamation	1	
Social Impacts		
Relocation of Local Inhabitants	1	-
Impact on Tourism	1	-
Impacts on Fishery Activities	1	-
Impacts on Future Regional Development		
Urban Development	1	-
Maritime and Industrial Development Potential	1	-
Availability of existing Public/Private Function		
Availability of existing Public/Private Function	-	1

superior(1) even(0)

22.2 Alternatives of Priority Port Development Project Packages up to the Target Year 2020

The alternative priority project packages in the Thi Vai-Vung Tau area are proposed in the table below. The new container port project by the Vietnamese Government targeted for 2010 as an Intra-Asian maritime gateway in the south of Vietnam should be started in Cai Mep site. For the second stage of the project, there are two alternative project packages. The first one is to construct the new deeper depth of berths in Cai Mep and the second one is to construct new deeper berths in Ben Dinh-Sao Mai. It is necessary to determine the future project site for vessels of Post-Panamax size after checking the following conditions.

- Overall economic growth of Vietnam
- Datum of natural condition (current, wave, siltation, etc)
- Increase of container traffic in the hinterland of ports
- Existence of constant container consignor / consignee
- Detail estimation on environmental and social impact

Table 22.3 Alternative Priority Port Project Packages

	Year 2010	Year 2020
Alternative Package 1	General Cargo Ship 50,000 DWT in Thi Vai (Tidal) Container Ship 50,000 DWT in Cai Mep (24 hrs)	General Cargo Ship 50,000 DWT in Thi Vai (Tidal) Container Ship 80, 000 DWT in Cai Mep (24 hrs)
Alternative Package 2	General Cargo Ship 50,000DWT in Thi Vai (Tidal) Container Ship 50,000 DWT in Cai Mep (24 hrs)	General Cargo Ship 50,000 DWT in Thi Vai (Tidal) Container Ship 80,000 DWT in Ben Dinh- Sao Mai (24 hrs)

Particularly quick service is very important for container vessels. Therefore, the channel section up to Cai Mep should be determined as two-way traffic with the sufficient depth for the full draft of container vessel. On the other hand, the Thi Vai site should be developed as the general cargo port with the channel by taking account of tidal advantage.

PART 3 SHORT-TERM DEVELOPMENT PLAN

Chapter 23 Short-term Port Development Plan up to the Target Year 2010

23.1 Maritime and Social Movements related Port Development

23.1.1 Analyses on Calling Ships in 2010

(1) Introduction

The dramatic changes observed in cargo handling volume rankings come from the change of commodity flows in the world, corresponding to the globalization of economy including Asian NIES and ASEAN countries. Another reason is the severe competition in the marine container transport market, particularly in the Asian-Pacific and Asian-Europe market. Together with the intense competition among shipping companies, inter-port competition is also becoming more and more severe.

Under this atmosphere, shipping companies are making strategic efforts to survive in the market by reducing operational cost through forming alliances and introducing huge container vessels to take advantage of the economy of scale. In accordance with these strategies of shipping companies, port administrators are rushing also to survive in the market by constructing deep-water container berths, reducing port and cargo handling charges and providing " one-stop service" using the electric data information system (EDIS). Most main ports in East Asia as well as Japanese ports are rushing to construct large container terminals with deep-water berths to catch up with PSA (Singapore Port Authority).

However, questions arise. Can all of these ports attract large vessels? Will there be changes in the routing of ship companies? And if so, what will happen in the market? Answers to these questions are very important to port administrators. No research that directly addresses these questions exists. Mr. Kuroda et al of Kobe Univ. have developed models of the container marine transportation market from these points of view.

In this report, the possibility of large container vessel calls to the new deep port in Vietnam and the influence on the other ASEAN ports in the year 2010 are analyzed using their numerical models.

(2) Model

There exist some cooperation among carriers in the form of alliances. However, it is true that competition among carriers is very severe in the market, and the alliance among carriers is not necessarily stable. Then, the present report assumes the market can be regarded as "completely competitive". In modeling the behavior of carriers, it is also assumed that carriers intend to optimize routing network and vessel size by choosing importing and exporting ports and by assigning cargo volume at each port. The concept of the model is shown in Figure A2.1. In this report, a route connecting with two specific ports is called a "link", and a particular link accepts only one kind of vessel size. Thus, for example, if there are two different sizes of vessel navigating on a route between two specific ports, two different links are considered corresponding to each vessel size.

(3) Premises and Assumptions

In the present report, the market is assumed as perfectly competitive, and following premises and assumptions are introduced:

1) There are, in the market, many carriers that provide same quality of service and homogeneous shippers.
2) No sunk cost is assumed for participating to and retiring from the market.
3) The O.D. cargo volume is a priori given and is not influenced for service provided by carriers.
4) Carriers have to transport all the O.D. cargo.
5) Carriers can choose some classes of vessel size.
6) Navigation time on a specific link is assumed as same for different vessel size. In the numerical examples of the present report, 1,000TEU, 3,000TEU and 6000TEU vessels are considered.

(4) Carrier's Behavior

Carriers make a strategy to maximize their profit. However, according to the assumption of "perfectly competitive market", their surplus can be regarded as equal to zero. Therefore, each carrier chooses a routing network among ports including service frequency, vessel size to minimize his total operation cost.

(5) Future Market in 2010

The model is also applied to the market in 2010, where 1000TEU, 3000TEU and 6000TEU vessel size are considered. The O.D. cargo volume in 2010 is estimated based on the data in 2000 considering the increasing ratio of GDP of each zone.

Vietnamese market consists of two areas. One is Hanoi area including Hai Phong Port and the other is the south area, i.e. SFEA including HCMC. Chinese market is divided into three areas i.e. Tientsin, Shanghai, Hong Kong. Taiwan and Philippines markets are treated as one market. Port development plan of related countries are used to estimate future port facilities in the year 2010. The present port charges are used as the future ones of each port.

(6) Calculation Result

The calculation result shows that major transshipment ports will change in the year of 2010. The transshipment cargo volume of Singapore, Keihin (Tokyo and Yokohama) and Busan will decrease. In fact, the transshipment cargo at Keihin will become zero. On the other hand, that of Hanshin (Osaka and Kobe), Hong Kong, Leam Chabang and the new deep port in SFEA will increase. Though the 6000 TEU vessels will be introduced in the year 2010, the major container vessel size will be 3000 TEU. For although there will be a large cargo demand in China, only Hong Kong will be able to accommodate 6000 TEU vessels.

Concerning the transportation between the Asia and Pacific market, 3000 TEU container vessels will be used mainly at Keihin, Hong Kong, and Kaohsiung. On the other hand, 6000 TEU container vessels calls will be limited to Hanshin, Busan, Kaohsiung and Singapore. Regarding transport between the

Asia and Europe market, 3000 TEU container vessels will call at Busan, Shanghai and the new deep port in the south of Vietnam. 6000TEU container vessels calls will be limited to Kaohsiung, Leam Chabang, Port Kelang and Singapore. The calculation result shows that 3000 TEU container vessel will call at major ports in Asia in the year 2010. The calculated figures are different from the result of cargo demand forecast. The tendency of the calculated figures for vessel movement is meaningful.

(7) Vessel Calls at the new deep port in SFEA

6000 TEU container vessels are expected to call at the new deep port in SFEA to avoid the expensive port charge and congestion of Singapore port. Singapore port will act as the transshipment port for Thailand, Malaysia, and Indonesia. This international transshipment port will always be crowded. Therefore, carriers will select Vietnam's new deep port because it will not be crowded and because it can accommodate large container vessels. Almost all of the transshipment cargo for this new deep port in SFEA will come from the north of Vietnam and the transshipment of Vietnamese cargo in Singapore will decrease in the year 2010. It is important that the transshipment system on the domestic cargo from the north Vietnam should be examined at the same time. In addition to this, the transportation network by 6000 TEU vessels between the new deep port in SFEA and Leam Chabang and Kaohsiung will be actualized.

Figure 23.1.1(1) Concept of the Model

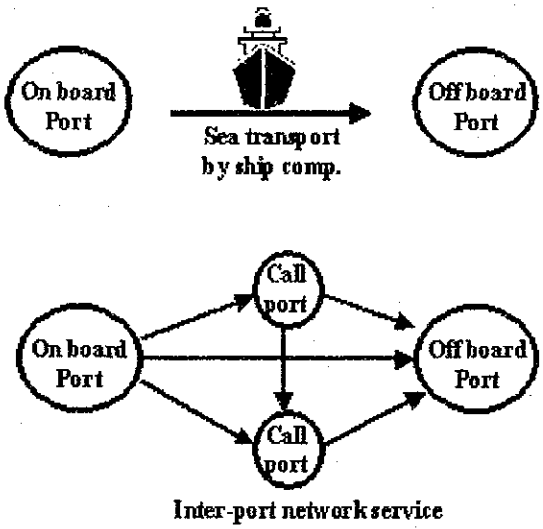


Figure 23.1.1(2) Calculated Cargo Volume in 2000

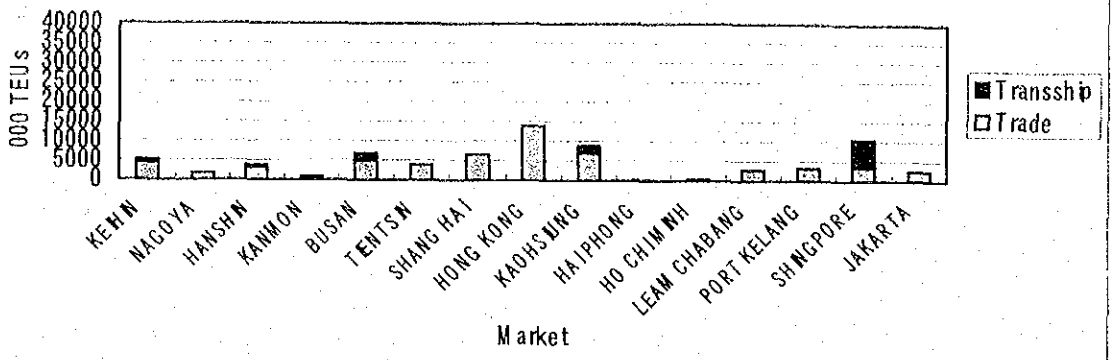


Figure23.1.1(3) Calculated Cargo Volume in 2010

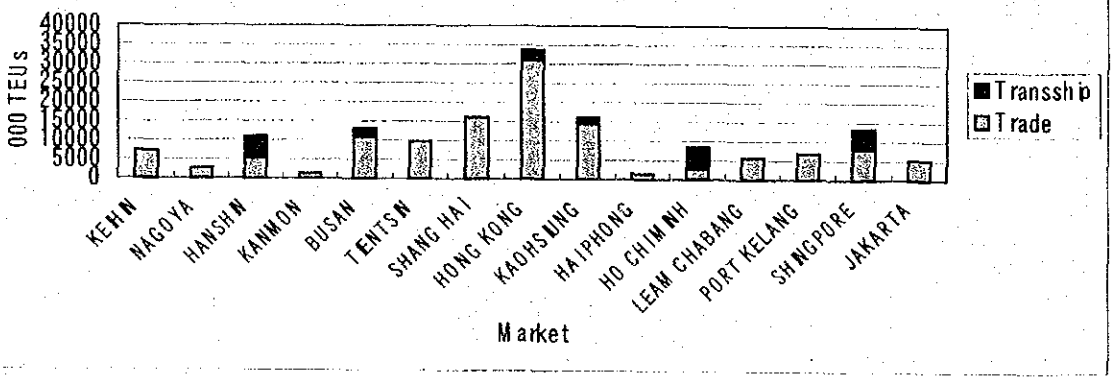
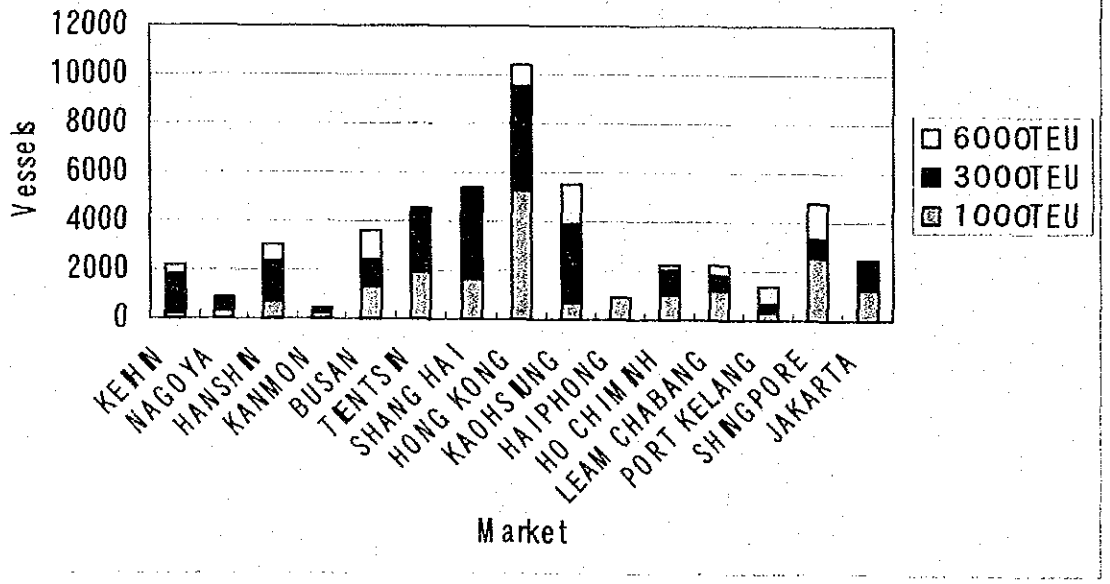


Figure 23.1.1(4) Calculated Vessel Calls in 2010



23.1.2 Social Movements related Port Development

The total cargo throughput of the ports in SFEA will increase twofold over the present volume. In particular, container cargo is expected to greatly increase. In addition, urban traffic is also expected to sharply increase. The friction between the cargo transport to and from the ports in the central district of the Ho Chi Min City and increased urban activities will become more significant in the near future. It is recommended that the existing ports in the center part of the city be relocated to a more appropriate location for port activities; the areas where those ports are now located should be developed for other purposes.

Manufacturing practices are becoming increasingly global in nature: Asian countries are now expected to comply with both WTO and AFTA regulations. Under such circumstances, it can be safely assumed that maritime transport by container vessels will increase each year. In addition, the size of container vessels will become larger than that of today. Accordingly, the development of a deep port along the Thi Vai River is necessary.

The central part of HCMC has been expanding toward the east at quite a rapid pace. The completion of the under-water tunnel as well as the Phu My Bridge crossing over the Saigon River will accelerate this expansion further. In addition to this, the development of the highway connecting to Long Thanh would have a substantial impact on the eastern area of the city. In order to cope with such urban expansion, the ports located in the central part of the city should be relocated to the Cat Lai Area. Therefore, it is important to commence development of the Cat Lai Port.

Together with economic growth, citizens usually enjoy an increase in leisure time. As the tourism demand increases, tourist sites along the riverside as well as the seaside will be developed further following the example of other places in Asia. Therefore, it will be important to improve the urban environment, especially along the river and the seashore to this end, it is recommended to relocate some of the existing factories, which have an adverse effect on the urban environment to proper areas (such as to the Hiep Phuoc Area). In conjunction with the relocation of such factories to the Hiep Phuoc Area, the ports having an adequate scale should be developed in this area so as to handle the cargo to and from these relocated factories.

Furthermore, the improvement of both water and bottom quality of the Saigon River is necessary. The wide range of administrative organizations mandated for such environment affairs concerned to the port, river, industry, and etc. of the city or along the river should continue their efforts and cooperate with one another to improve the water as well as bottom quality of the river and ports.

Also, when developing marine leisure facilities, it is important to preserve the natural environment in the Can Gio and the Vung Tau areas to provide attractive leisure spots for weekend tourists.

23.2 Characteristics of SFEA Port Traffic in 2010

SFEA ports serve vast lands even beyond SFEA. In order to characterize the year 2010 SFEA port traffic in more detail, this section has analyzed the hinterland development, focusing on industrial estates within SFEA and freight transport corridors beyond SFEA.

23.2.1 Anticipated Hinterland Development

Industrial Development within SFEA

Manufacturers are a group of big port users and particularly they are dominant within SFEA. The existing government policy encourages new industrial development in designated areas rather than in congested urban areas. It is physically translated into the SFEA development master plan during the planning period 1996-2010 prepared by MPI in collaboration with AusAID and then approved by the prime minister (No. 44/1998/QD-TTg).

The SFEA master plan shows the following directions in industrial development:

- To strongly develop industrial parks, especially high-tech industrial parks with export oriented manufacturers,
- To continue industrial development in HCMC while three large industrial centers will be expanded at South Binh Duong, Bien Hoa and Baria – Vung Tau,
- To promote high-tech, clean and non-polution industries in HCMC,
- To allow light and clean industries in South Binh Duong so as to avoid discharging sewage into Saigon and Dong Nai rivers, and
- To coordinate suburban industrial estates with new settlements nearby

The SFEA master plan projected that, during the period 1996-2000, about 20 industrial estates with an aggregated land area of 2,500-3,000 ha would be built. At present, a number of licensed industrial estates (3 EPZ and 30 IZ) are competing each other, exceeding the projected number. As results, not a few estate developers are suffering from low occupancy and severe competition in reducing land leasehold charges. From a regional development viewpoint, the following weaknesses can be pointed out:

- Each industrial estate has been licensed without enough coordination among local authorities. Thus, those estates offer similar services without locality while their infrastructure is generally weak such as social infrastructure beyond their fences.
- HCMC has not much focused on high-tech and clean industries. It still strongly keeps labor intensive industries. On the other hand, suburban industrial estates are mushrooming without paying attention to labor force distribution. Technical and qualified employees are insufficient.
- Environmental pollution is becoming more concern particularly along NH1, NH51 and the Thi Vai River.

Taking the master plan and actual industrial development into account, the following implications can be obtained for port traffic demand: (Refer to Table 23.2.1)

- In the 2000s, existing estates will be crowded while vigorous land development will continue at new estate sites. Dong Nai will be the biggest industrial center within SFEA, followed by HCMC.

- However preferred industries on those new sites will be high-tech, light and clean industries due to their inland position. In the light of transport management, the SFEA industrial sector will more depend on trucks.
- Heavy and chemical industries are planned at Hiep Phuoc in HCMC and Phu My and Cai Mep in Baria – Vung Tau since those sites are advantageous to direct shipment. But their full operation will start after 2010.

Corridor-wise Development in connection with SFEA Ports

SFEA ports serve a wide hinterland through the following five corridors: (Refer to Figure 23.2.1)

(1) North – South Coastal Corridor

This corridor forms the most important national backbone by air, road, rail and coastal shipping. This corridor principally stretches in a 1,700-km long alignment between Hanoi and HCMC. The corridor is lined with 32 major urban centers where more than half of the national urban population resides in. In the 1990s, a concerted effort was made to rehabilitate dilapidated road infrastructure. At present, goods and people can be effectively and economically transported. On the other hand, rail and coastal shipping have not been developed adequately due to inadequate services on poor infrastructure.

South Vietnam coastal provinces (Binh Thuan and Ninh Thuan) rely on mainly road transport in their access to SFEA ports while rail and coastal shipping take supplemental roles. Those provinces need some imported goods such as refined oil products and fertilizer for mainly subsistence farming and fishery. The access traffic in 2010 is estimated at nearby 0.8 million tons.

Table 23.2.1 Industrial Estate Development in SFEA

(Unit: ha)

	EPZ and IZ	SFEA Master Plan		Developed Land (as of 2000)
		Year 2000	Year 2010	
	Ho Chi Minh City	**910**	**3,440**	**1,997**
1	Tan Thuan EPZ	300	300	300
2	Linh Trung EPZ	60	60	126
3	Hiep Phuoc IZ	200	300	332
4	Le Minh Xuan IZ	100	300	100
5	Tan Binh IZ	120	250	155
6	Tan Tao IZ	100	200	181
7	Binh Chieu IZ	30	30	27
8	Cat Lai IZ	0	400	134
9	Linh Xuan IZ	0	200	0
10	Phu My (Nha Be) IZ	0	400	0
11	Tay Bac Cu Chi IZ	0	150	220
12	Tan Qui Cu Chi IZ	0	150	0
13	Tan Thoi Hiep IZ	0	300	215
14	An Ha IZ	0	200	0
15	Vinh Loc IZ	0	200	207
	Dong Nai Province	**1,520**	**4,132**	**1,981**
1	Bien Hoa 2 IZ	376	376	365
2	Ho Nai IZ	100	300	191
3	Song May IZ	150	500	227
4	AMATA IZ	294	700	129
5	Nhon Trach IZ	300	1,000	448
6	Go Dau IZ	300	356	186
7	Tam Phuoc IZ	0	300	0
8	An Phuoc IZ	0	300	0
9	Long Khanh IZ	0	50	0
10	Xuan Loc IZ	0	50	0
11	Dinh Quan IZ	0	50	0
12	Tan Phu IZ	0	50	0
13	LOTECO EPZ	0	100	100
14	Bien Hoa 1 IZ	0	0	335
	Binh Duong Province	**921**	**2,471**	**803**
1	Song Than IZ	185	185	403
2	Binh Duong IZ	36	36	19
3	VN – Singapore IZ	200	700	116
4	Viet Huong IZ	50	100	32
5	An Phu IZ	200	400	0
6	Tan Dinh An IZ	150	150	0
7	Bau Beo IZ	100	300	0
8	Truong Bong Bong IZ	0	200	0
9	Phu Hoa IZ	0	200	0
10	Go Dau -Phu Tho IZ	0	200	0
11	Dong An IZ	0	0	85
12	Tan Dong Hiep IZ	0	0	148
	Baria – Vung Tau Province	**500**	**1,810**	**1,809**
1	My Xuan – Phu My IZ	400	800	1,648
2	Long Huong IZ	100	400	0
3	Ngai Giao IZ	0	200	0
4	Phuoc Thang IZ	0	130	0
5	Dong Xuyen IZ	0	160	161
6	Ben Dinh IZ	0	120	0
	SFEA Total	**3,851**	**11,853**	**6,590**

Source: Implementation Status of SFEA Socio-economic Development Policies, MPI, 2000
Respective local EPZ/IZ management authorities

(2) HCMC – Dalat Corridor

This road-only corridor (NH1/NH20) connects with the mountainous province of Lam Dong. It is unique and promising since there is vigorous cash-crop haulage such coffee, vegetable and horticulture product supplied to not only domestic markets but also overseas via seaport. It also functions as a tourist belt with rich natural resources and historical sites.

The NH 20 section is 220 km long, diverging from NH1 to Dalat. By using this road transport Lam Dong Province is closely linked with the SFEA economy, receiving various primary and industrial goods and supplying the above cash crops. The port traffic on this corridor in 2010 is estimated at about 0.7 million tons.

(3) North – South Upland Corridor

The corridor, so-called "Ho Chi Minh Trail", is an alternative to the North-South Coastal Corridor, passing hilly/mountainous area near the borders with Lao PDR and Cambodia. There is no other means than road but limited air services to the Central Highlands, i.e., Pleiku and Buon Me Thuot, mainly from Tan Son Nhat. The government gives a top priority to tap domestic fund into this road improvement project. The corridor development will provide the national transport system with two important opportunities. One is to be a shorter route than NH1, e.g., the Danang – HCMC sections by NH13/14 (896 km) in comparison with NH1 (970 km). The other is to improve accessibility to isolated upland areas.

The corridor has the road sections belonging to NH13 and NH14, passing through the provinces of Binh Phuoc and Dac Lac where agricultural development is active in exploiting the land and planting coffee and rubber trees. The fright volume through this corridor to/from SFEA ports will be about 2 million tons in 2010.

(4) HCMC – Phnom Penh Corridor

This international corridor connects HCMC with Phnom Penh, the capital city of Cambodia. Although the terrain is flat, there are two major ferries on the Cambodian side. At present, the Trans-Asia Highway Project is ongoing to upgrade the existing road (NH22 in Vietnam) financed by ADB. There is a missing link between Vietnam Railway and Royal Cambodia Railway: 145 km in Vietnam and 135 km in Cambodia. This is a partial section under the Trans-Asian Railway Project monitored by the UNESCAP.

This corridor development will make various linkages possible between the two metropolitan areas. Since the corridor distance (210 km by road) is shorter than that of Phnom Penh – Sthanoukville (230 km by road), a group of Saigon River ports may function as the gateway ports to Phnom Penh. The corridor development may also affect roadside land use, transforming rural lands into suburbs and stimulating industrial development. Regarding to road sector, the ongoing highway project will solve a capacity constraint in the short term. Institutional development by means of bilateral and multilateral arrangements is very important to liberalize cross-border traffic and promote multi-modal transport. The SFEA port traffic through this corridor will be about 1.5 million tons in 2010.

(5) HCMC – Can Tho Corridor

There is a long history of goods exchange between HCMC and Can Tho. Today, roads and inland waterways are transporting the corridor-wise traffic. With this corridor, the Mekong Delta as a whole relies on SFEA ports.

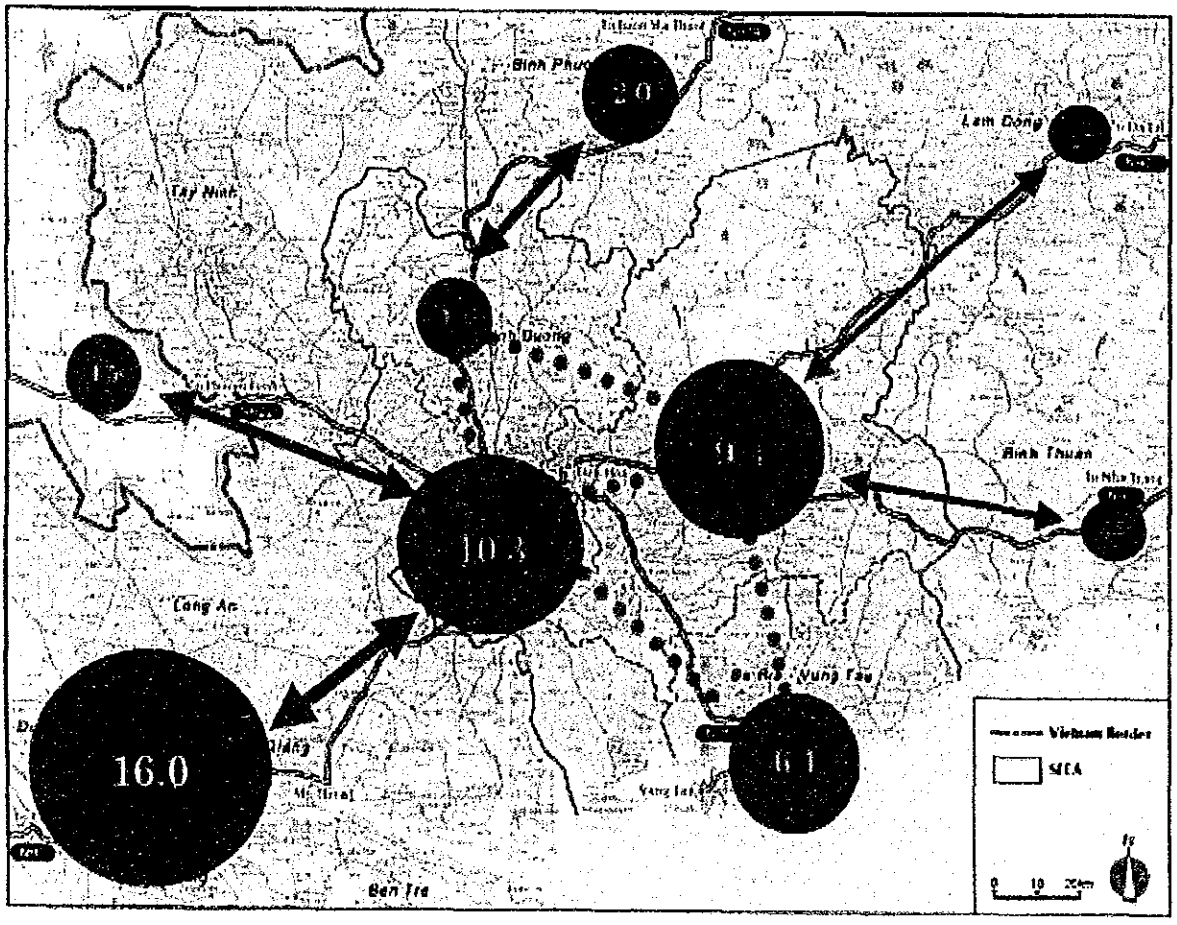
Nowadays, capital investment in roads, bridges and waterways has been expanding the corridor capacity. The road section on NH1 is completely rehabilitated while some existing short bridges

are under rehabilitation and Can Tho Bridge is to be constructed. The construction of My Thuan Bridge in 2000 makes road traffic more intensive along the route. However, capacity constraints on NH1 are already visible and expected to worsen. The corridor is endowed with large and diversified waterway resources. In particular, Cho Gao and Cay Kho canals cope with the largest fluvial traffic in Vietnam, i.e., around 10 million tons per year. Major commodities are rice, fertilizer and construction materials. The waterway route including those canals is now under improvement by the World Bank to ensure safe navigation by modern IWT fleet even at night.

According to MOT[1], the freight modal split in 1999 consisted of 62% for IWT and 38% for road. Since a toll road project is proposed under BOT arrangements, both the modes will equally share in 2010. In the same year, the port access traffic is estimated at around 16 million tons.

The SFEA port traffic in 2010 is shown with the matrix of the above hinterland segments and major commodity types in Table 23.2.2. The relevant provincial data to form the basis for traffic demand projection are indicated in Table 23.2.3.

Figure 23.2.1 SFEA and Its Connected Corridors



Note: Port access traffic (million tons in 2010)

[1] 'National Transport Development Strategy up to 2020 in Vietnam', MOT, 2000

23.2.2 Impact of Thi Vai – Vung Tau Ports on Access Transport

Access Transport Development

There are three access transports available to serve SFEA port traffic. Their availability is briefly described as follows:

Road transport: This is the road transport's role to collect and distribute various port cargoes within all port hinterlands even including Cambodia. However, it has a fundamental problem in capacity. It has led the HCMC Peoples' Committee to take several measures, among others, enforcement of truck ban and truck weight restriction at the bridges of Binh Trieu and Binh Phuoc. New infrastructure projects such as Thu Thiem Tunnel and Phu My Bridge are expected to relieve those clogged situations. In regard to the connectivity between HCMC and Thi Vai – Vung Tau, a toll road project prepared under BOT arrangements will improve truck haulage and shortcut the existing NH51 route by 30 km not via Bien Hoa.

Table23.2.2 Details of Year 2010 SFEA Port Traffic (except Transshipment)

('000 MT)

	SFEA				SFEA Connected Corridors					Total
	HCMC	Binh Duong	Dong Nai	Baria – Vung Tau	HCMC – Mekong	HCMC – Phnom Penh	North-South Upland	HCMC – Dalat	North-South Coastal	
Overseas Shipping	7,004	1,014	7,850	3,239	9,427	1,251	1,362	503	509	32,159
Rice & Food Crop					4,600	100				4,700
Industrial Crops			81				500	119		700
Fishery Products					688					688
Forest Products							78	22		100
Steel & Iron	503	67	193	188	295	23	18	11	15	1,313
Fertilizer		77			2,743	119	252	119	181	3,491
Manufactured Goods	6,501	870	7,576	3,051	1,101	363	514	232	313	20,521
Cambodian Transit Cargo						646				646
Coastal Shipping	972	144	706	2,169	3,250	134	319	79	97	7,869
Rice & Food Crop					1,985	42				2,027
Forest Products							44	13		57
Steel & Iron	140	19	54	266	82	6	5	3	4	579
Construction Materials	68		18	24						110
Cement/ Clinker	95	25	66	71	15	9	16	4	4	305
Fertilizer	111	13	6	201	456	20	42	20	30	898
Coal/Other Mining	270	49	226	1,471	663	41	189	29	45	2,983
Manufactured Goods	288	39	336	135	49	16	23	10	14	910
Refined Oil Products	2,281	288	887	717	3,306	151	316	121	163	8,230
Total Port Traffic	10,257	1,446	9,443	6,125	15,983	1,536	1,997	703	769	48,258
Available Access Transports*	Rd, IWT, CS	Rd, IWT	Rd, Rl, IWT	Rd	Rd, IWT	Rd	Rd, Air	Rd	Rd, Rl, CS	

Note*) Rd: Road, Rl: Rail, CS: Coastal Shipping

Table 23.2.3 Detailed Provincial Data by Major Commodity

(unit: '000)

Province	Surplus and Deficit Analysis*							Steel/Iron (Consumption)	Manufactured Goods (Production)
	Rice and Food Crops	Industrial Crops	Fishery Products	Fertilizer	Cement/ Clinker	Coal/ Other Mining	Refined Oil		
East of Dong Nai River	**-622.7**	**219.9**	**237.5**	**198.1**	**-2,312.9**	**-2,140.4**	**-1,949.5**	**1,272.3**	**3,226.3**
Dong Nai	-300.5	109.7	-75.9	16.0	-1,055.8	-300.7	-916.1	603.2	1,529.5
Ba Ria - Vung Tau	-140.2	-132.4	147.1	527.6	-1,124.8	-1,742.3	-739.9	587.0	1,488.5
Binh Thuan	10.1	12.0	170.4	-122.0	-45.8	-37.1	-100.9	23.9	60.6
Ninh Thuan	-34.6	-8.2	33.5	-86.6	-19.6	-22.3	-67.3	23.3	59.1
Lam Dong	-157.5	238.8	-37.6	-136.9	-66.9	-38.0	-125.3	34.9	88.6
West of Dong Nai River	**7,881.1**	**1,887.0**	**460.5**	**-3,267.2**	**-2,536.6**	**-1,610.3**	**-6,547.0**	**2,829.4**	**7,174.0**
Ho Chi Minh	-1,351.6	-561.9	-133.4	289.5	-1,508.5	-359.2	-2,290.0	1,571.7	3,985.2
Binh Duong	-152.9	87.8	-29.9	-89.0	-398.1	-64.6	-297.4	207.8	526.9
Binh Phuoc	-151.8	68.2	-23.4	-82.9	-13.0	-176.4	-60.0	6.8	17.2
Dac Lac	-177.4	521.8	-17.5	-323.5	-241.3	-74.2	-266.3	48.3	122.5
Tay Ninh	162.3	261.4	-34.0	-137.3	-139.3	-54.0	-155.7	72.7	184.3
Long An	974.2	88.4	-39.8	-227.0	-190.8	-63.6	-254.5	55.0	139.4
Dong Thap	1,378.9	16.8	22.9	-264.1	-132.4	-71.2	-188.3	38.1	96.7
An Giang	1,286.8	6.0	101.9	-313.0	-274.3	-104.9	-596.2	110.7	280.7
Tien Giang	700.9	15.1	42.1	-327.8	-152.6	-75.5	-263.3	44.0	111.5
Vinh Long	571.0	218.8	-34.4	-226.2	-42.0	-57.0	-174.1	40.9	103.7
Ben Tre	-89.2	334.1	96.0	-260.6	-206.3	-74.5	-258.6	59.4	150.7
Kien Giang	1,383.4	30.3	289.8	-293.3	1,807.9	-100.8	-457.2	174.8	443.2
Can Tho	1,151.6	223.3	-74.6	-200.3	-276.2	-114.4	-548.4	177.4	449.7
Tra Vinh	436.6	261.1	64.2	-203.7	-110.4	-53.5	-155.0	31.8	80.7
Soc Trang	972.7	23.1	-0.4	-234.5	-200.6	-63.9	-184.4	57.8	146.5
Bac Lieu	425.5	51.4	48.0	-113.8	-161.0	-40.7	-135.1	46.4	117.6
Ca Mau	360.1	241.3	183.0	-259.7	-297.7	-61.9	-262.5	85.8	217.5
South Vietnam Total	**7,258.4**	**2,106.9**	**698.0**	**-3,069.1**	**-4,849.5**	**-3,750.7**	**-8,496.5**	**4,101.7**	**10,400.3**

Note*) A positive quantity means a surplus amount while a negative quantity means a deficit amount.

Rail transport: It takes a limited role contrary to road. According to Vietnam Railway, freight trains will terminate at Binh Trieu Station, Dong Nai Province and not enter into HCMC in order to enjoy a lion's share among massive commuters. This operational change will further weaken the rail's freight service.

IWT: It is significant between HCMC and the Mekong Delta. Capacity expansion will be done by way of modernizing the trunk waterways and development alternative waterways such as the route via Dong Thap. But it accounts for only 2% in the section between HCMC and Baria – Vung Tau Province. It is marginal enough to disregard the future role in the same section.

Anticipated Impact

Since ports are concentrated on the HCMC side, a considerable fright flow must cross the Dong Nai River. The volume is estimated at 5.6 million tons in 2000 or equivalent to over 1,500 ten-ton trucks per day. When a Thi Vai – Vung Tau gateway port plays a significant role as projected, the traffic inflow across the Dong Nai River to HCMC central area will be substantially mitigated.

Although shippers' preference in port decision is not simple, new gateway port may reduce such river-crossing traffic to the lowest level of 1.3 million tons in 2010. Without it, the volume would have to hike up to the preposterous level of 13.6 million tons. Based on the above analysis, an SFEA gateway port located at Thi Vai – Vung Tau area would be well suited not to add heavy freight load on the HCMC urban transport system.

Table 23.2.4 Estimated River-crossing Traffic

	Without Thi Vai – Vung Tau Gateway Port	With Thi Vai – Vung Tau Gateway Port
Year 2000	5.6 million tons	- Not applicable -
Year 2010	13.6 million tons	1.3 million tons

23.3 Transportation System up to the Target Year

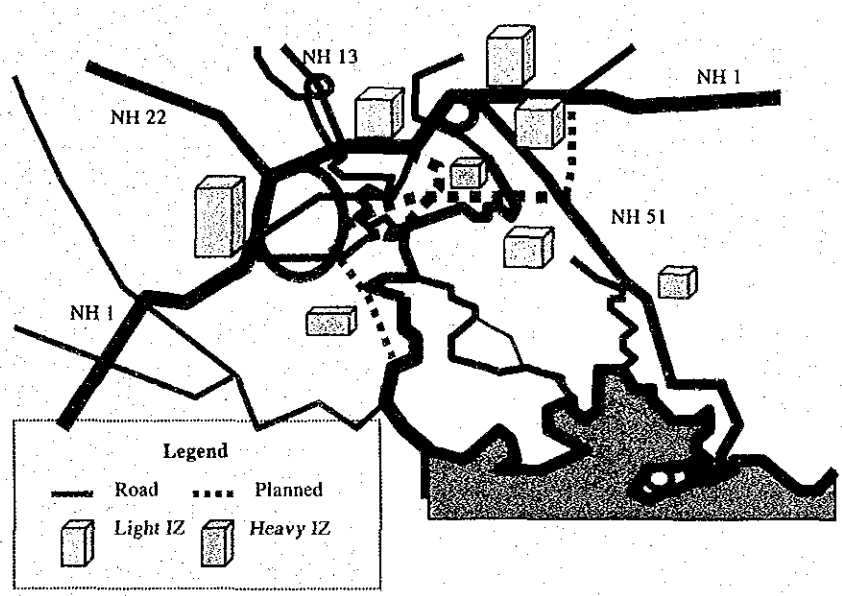
The main transportation networks in the target year 2010 that function as the artery of commodity circulations in the southern Vietnam are as follows.

(1) Road

National highway No.51(NH 51, 4 lanes) connecting Bien Hoa with Vung Tau links numerous industrial zones in the region with the ports along Thi Vai River. Major existing industrial zones located along NH 51 are Nhon Trach, Go Dau in Dong Nai province and My Xuan, Phu My. The occupancy rates in these industrial zones are, however, still low.

National highway No. 1 (NH 1) which is the trunk route in SFEA connects with NH 51 in Bien Hoa City. NH 1 linking with other major national highways such as NH 13, NH 20 and NH 22 in the outskirts of HCMC functions as the artery of cargoes transportation between ports in Thi Vai River and SFEA, Mekong Delta, Central Highland as well as Cambodia. (See the Figure 23.3.1).

Figure 23.3.1 Major Road Network in SFEA



The East-West Expressway planned to traverse HCMC via Thu Thiem tunnel (6 lanes) is to be completed in 2005. This expressway with the road widths of 45m, 60m and 100m is expected to ease the traffic congestion in the city and to help the flow of cargoes between HCMC and ports in Thi Vai River. In District 2 in HCMC, the provincial road No. 25 (PR 25) is now being expanded to 2 lanes to connect Cat Lai Industrial Zone and Cat Lai port with NH 1. This PR 25 will be linked with the East-West Expressway when completed.

HCMC - Vung Tau Expressway to link HCMC with Ba Ria - Vung Tau is expected to contribute not only to the mitigation of traffic congestion on NH 1 but also to regional economic development because it will connect HCMC with Dong Nai and Ba Ria - Vung Tau provinces by a short-cut route. Both provincial governments of HCMC and Dong Nai are planning to construct this

expressway as a top priority project in their transport sector by 2005. And the Provincial Road No.25 B (Extension of National Highway No.20, 35km) is also expected to function as a by-pass to connect NH 1 and NH 51 at Dau Giay and at Long Thanh in Dong Nai province. This planned provincial road will help to reduce the traffic flow on NH 1.

Nguyen Van Linh Highway (NVLH, 17.8km, designed 6 lanes) is the artery of new urban development in Saigon South. NVLH has already been opened to the traffic in the full route.

HCMC government is now planning to construct a bridge (Phu My Bridge, 55m clearance or alternative 42m clearance) across Saigon River that connects Saigon South and District 2. This bridge will link NVLH and the East - West Expressway in District 2 in 2006 and will help VNLH function as another vital route to traverse HCMC besides East-West Expressway. New provincial road No.34 (PR 34) will connects NVLH and East-West Expressway with Hiep Phuoc Industrial Zone in the south of HCMC.

Both the East-West Expressway and Phu My Bridge will much contribute not only to mitigate the traffic congestion in HCMC but to enhance the regional development with Cat Lai IZ and Hiep Phuoc IZ as their cores in the eastern and the southern areas in HCMC.

National highway No.55 (NH 55) and No.56 (NH 56) connecting with NH 51 in Ba Ria city in Ba Ria-Vung Tau province will be rehabilitated or newly constructed in some sections (5km and 21km respectively) of these highways by 2010 according to their 10 years provincial development plan. And in Dong Nai province, District road No.19 (34km) surrounding Nhon Trach Industrial Zone with the total site areas of 2,000 ha will also be upgraded to the provincial road standards by 2010. Trunk roads inside the IZ have already been completed.

In case a deep-water port is constructed along Thi Vai River, access road corresponding to the traffic volume between the port and NH 51 is required either in Phu My area, Cai Mep area or Ben Dinh-Sao Mai area

In Mekong Delta, National Highway No. 1 is being upgraded using World Bank financing in the section of HCMC - Can Tho - My Xuyen - Ca Mau - Nam Cam, and will be completed in 2005. And Can Tho Bridge using JBIC financing is also planned to be completed in 2004. Upgrading or rehabilitation works of other major national highways such as NH 22 (Trans Asia Highway to Cambodia, 80km, ADB finance), NH 1 in Central Region and HCM Highway leading to SFEA through NH 13 are also under way.

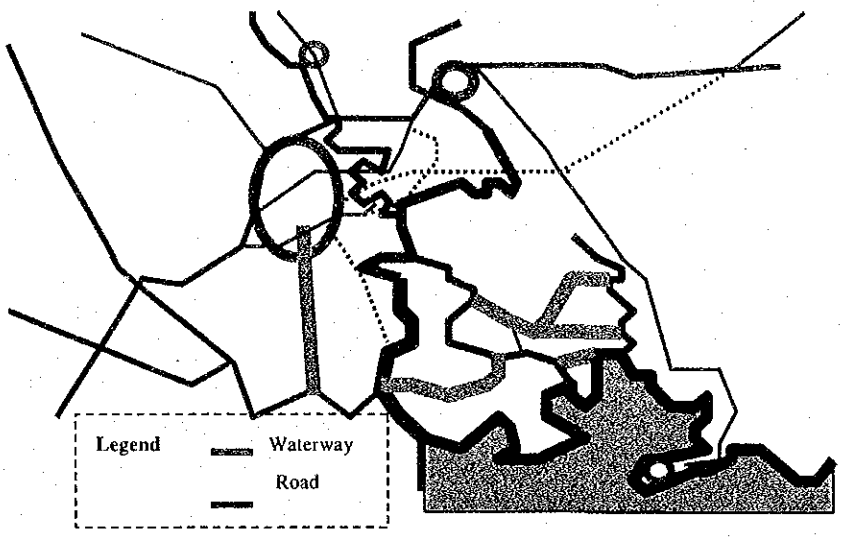
(2) Inland Waterway

Mekong River, Dong Nai River and their tributaries form the major inland waterway networks in the southern Vietnam. There are two trunk routes of inland waterways to link HCMC and Mekong Delta. One is HCMC - Long Xuyen - Kien Luong route (318km), and the other one is HCMC - Can Tho - Ca Mau route (330km). Currently, a project to upgrade and rehabilitate the waterways in Mekong Delta is progressing under World Bank financing. This project aims to develop Can Tho City as a core of the transportation networks in the Delta in order to mitigate the over-concentration of cargoes to HCMC. Under the project, the two trunk routes and Can Tho port

will be improved to shorten the navigation time between the destinations, and Bassac River mouth will be dredged to let 10,000DWT vessels navigate down to the sea and up to Phnom Penh in Cambodia by 2010.

Can Giuoc River in the south of HCMC connects the urban area and Mekong Delta In the city areas of HCMC there are 10 routes of inland waterways. A new river port with cargoes volume of 2.5 million tons in 2020 will be constructed by 2008 at the crossing of Can Giuoc River and Cho Dem River in District 8.

Figure 23.3.2 Inland Waterway in SFEA



Four routes of inland waterways have been established between Soi Rap River and Thi Vai River(See the Figure 23.3.2). However, the navigation in these routes is not easy due to complicated waterways in the area and the lack of navigation aids. Both provincial governments of HCMC and Baria - Vung Tau are planning to make a short-cut by digging a new canal and to provide navigation aids by 2010.

(3) Railway

Only the Reunification Line between the north and the south is the existing railway line in SFEA. There is no new project for the railway construction in SFEA by 2010.

(4) Airway

A passenger terminal of the international airport in HCMC has now been expanded and upgraded, and its runway has also been rehabilitated using JBIC funds.

23.4 Main Target for the Short Term Port Development

The ports should be designed to handle container cargoes and dry bulk cargoes and to accommodate vessels up to 50,000 DWT in the Thi Vai River to cope with the enlargement of

vessel size.

On Dong Nai and Soai Rap Rivers, ports should be designed to handle the same type of cargoes but to accommodate up to 20,000 DWT based on the cargo demand generated to and from IZ along these rivers. The relocation on a step-by-step basis of the ports along the Saigon River is recommended.

It is recommend to relocate the existing ports located along the Saigon River to both Dong Nai River and Soai Rap River banks on a step-by-step basis as well. The port relocation and redevelopment activities should be commenced from the Tan Cang area and proceed to the Nha Rong terminal of the Sai Gon Port.

A detailed survey and examination on large-scale navigation channel development in the Soai Rap River should be implemented as the development of such a channel is considered to be a key factor in increasing the scale of Hiep Phoc Port.

23.5 Required Scale of Port Development

In this section, the forecast of cargo volume handled at SFEA Ports by the year 2010 is formulated as a basis for planning, considering the functional allotment of port activity among ports in SFEA. An analysis is performed on the prospects of the future development plan in HCMC, reflecting the past trend and the overall cargo volume forecast. Finally, the development plan of port facilities is proposed as the short-term development plan.

23.5.1 Cargo Distribution by Ports

The required scale in the short-term development plan (2010) will be followed by the volume of cargoes handled at SFEA Ports. Summary of the cargo throughput at SFEA Ports is indicated in Table 23.5.1, based on the Table 13.1.3 and 13.1.4 in Chapter 13. The commodities such as wood chip, cement and clinker, which have been handled in the specialized port, are not included in the cargo volume below.

Table 23.5.1 Cargo Distribution by Ports at Year 2010

Port Name	Dry Cargo (x 1,000 ton)	Container Cargo (x 1,000 TEUs)
(HCMC Port Group)		
Sai Gon/Tan Cang/Ben Nghe/VICT	9,600	760
Other Ports in HCMC Port Group	3,000	-
Cat Lai IZ Port	400	300
Hiep Phuoc Container Port	400	110
Sub-total	13,400	1,170
(Thi Vai – Vung Tau Port Group)		
Go Dau/Baria Serece etc	3,200	-
TVG	1.100	-
LCC	-	1,100
Dong Xuyen Port	200	-
Sub total	4,500	1,100
Total	17,900	2,270

(Source: JICA Study Team)

The bases for cargo allocation to the ports are as follows:

- On 15th June 2000, the HCMC People's Committee issued Announcement No.62/TB-VP-CNN on the conclusion of the People's Committee at the meeting about investment projects in Cat Lai IZ, which said that the HCMC People's Committee agreed to assign Saigon Export Processing Zone and to formulate an investment project for the construction of a specialized port in the industrial zone with a size of 53 hectares to serve the Cat Lai IZ and the hinterland. Port construction, which is composed of 3 nos. of container berths and 2 nos. of general cargo berths, will be completed by 2010, according to the Feasibility Study on Cat Lai Industrial Zone Port by People's Committee of HCMC.

- In 1998, Sai Gon Military Port implemented the feasibility study of the 2nd phase Cat Lai Port Expansion Project to submit the authority concerned for approval under the approval of the Navigation Command and Ministry of National Defense due to the insufficient capacity of the existing port as well as the requirement of the next period to 2010.

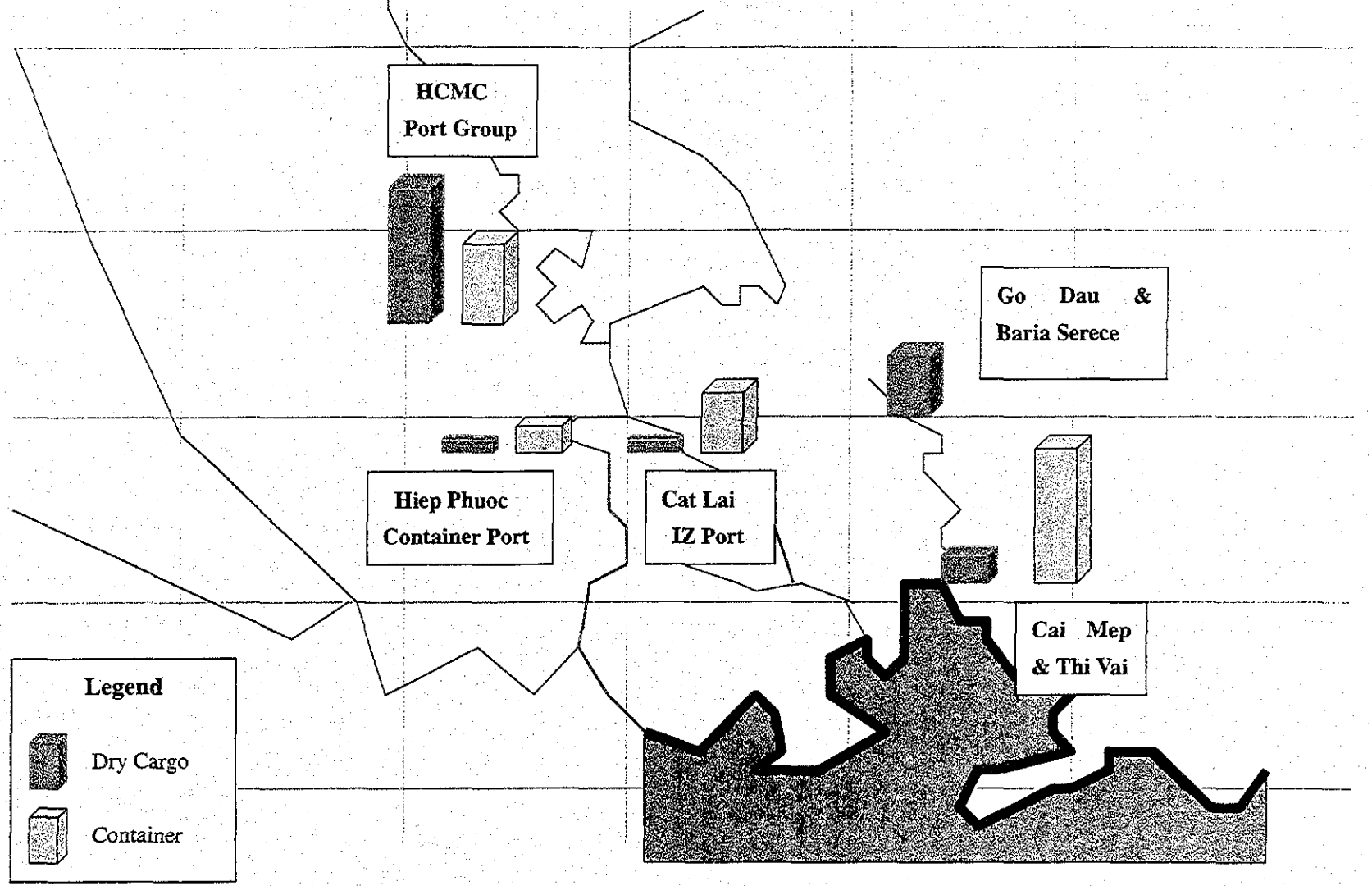
-On 10th July 1998, the prime Minister promulgated Decision 123/1998/QD-TTg, which approved the Adjustment of the HCMC Master Plan up to 2020. According to the Master Plan, following directions were pointed out regarding transport and infrastructure planning.

① Restriction of extension and development of the existing inner city ports such as Sai Gon, Ben Nghe, Tan Thuan, Tan Cang and Bason,

② Construction of new ports in the suburban area.

③ Step by step renovation of the inner city ports for on-river tourism.

Figure 23.5.1 Cargo Handling Volume by Ports at 2010



23.5.2 Number of Berth

The proposed scale under the short-term development plan (2010) should be in accordance with the volume of cargoes handled. The port facilities necessary to handle these cargoes are determined by referring to the past performance at the existing ports.

(1) General Cargo Terminal

1) Cat Lai IZ Port
Planned mooring facilities are shown in Table 23.5.2.

Table 23.5.2 Mooring Facilities at Cat Lai IZ Port

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	200	-11	20,000	General

The required number of general cargo berths is calculated based on the procedures as shown in Table 23.5.3.

Table 23.5.3 Calculation of Required Number of Cargo Berths

	Item		Unit	Calculation	General Cargo
a	Cargo Volume Handled		'000 tons		400
b	Average Cargo Volume Handled		Tons/vessel		5,000
c	Number of Vessel Calls		Calls/year	a/b	80
d	Cargo Handling Productivity		Tons/hour/vessel	40t/hx4G.x0.7	112
e	Total Berthing Hours		Hours/year	(b/d+6) x c	4,051
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	1			48.7

According to the UNCTAD Report "Port Development, a Handbook for Planners in Developing Countries", the occupancy ratio should be set so as not to exceed the following figures on ordinary berths.

Table 23.5.4 Upper Limit of Adequate BOR

Number of Berth	Upper Limit of adequate BOR (%)
1	40
2	50
3	55
4	60
5	65
6~10	70

Table 23.5.4 is referred. Considering availability for utilization of container berths (1 no.) in the Cat Lai IZ Port, it is assumed that number of objective berths will be two (2). Therefore, one (1)

berth is reasonable, judging from the berth occupancy rate of 48.7 % shown in the table.

2) Hiep Phuoc Container Port
Planned mooring facilities are shown in Table 23.5.5.

Table 23.5.5 Mooring Facilities at Hiep Phuoc Container Port

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	200	-11	20,000	General

The required number of general cargo berths is calculated based on the procedures as shown in Table 23.5.6.

Table 23.5.6 Calculation of Required Number of Berths

	Item		Unit	Calculation	General Cargo
a	Cargo Volume Handled		'000 tons		400
b	Average Cargo Volume Handled		Tons/vessel		5,000
c	Number of Vessel Calls		Calls/year	a/b	80
d	Cargo Handling Productivity		Tons/hour/vessel	40t/hx4G.x0.7	112
e	Total Berthing Hours		Hours/year	(b/d+6) x c	4,051
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	1			48.7

Table 23.5.4 is referred. Considering availability for utilization of container berths (1 no.) in the Hiep Phuoc Container Port, it is assumed that number of objective berths will be two (2). Therefore, one (1) berth is reasonable, judging from the berth occupancy rate of 48.7 % shown in the table.

3) Thi Vai General Cargo Terminal (TVG)
Planned mooring facilities are shown in Table 23.5.7.

Table 23.5.7 Mooring Facilities at TVG

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	250	-14	50,000	General
No.2	250	-14	50,000	General

The required number of general cargo berths is calculated based on the procedures as shown in Table 23.5.8.

Table 23.5.8 Calculation of Required Number of Berths

	Item		Unit	Calculation	General Cargo
a	Cargo Volume Handled		'000 tons		1,100
b	Average Cargo Volume Handled		Tons/vessel		15,000
c	Number of Vessel Calls		Calls/year	a/b	73
d	Cargo Handling Productivity		Tons/hour/vessel	60t/hx5G.x0.7	210
e	Total Berthing Hours		Hours/year	(b/d+6) x c	5,652
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	2			34.0

Table 23.5.4 is referred. Two (2) berths are reasonable, judging from the berth occupancy rate of 34.0 % shown in the table.

(2) Container Cargo Terminal

1) Cat Lai IZ Port

Planned mooring facilities are shown in Table 23.5.9.

Table 23.5.9 Mooring Facilities at Cat Lai IZ Port

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	200	-11	20,000	Container
No.2	200	-11	20,000	Container

The required number of container cargo berths is calculated based on the procedures as shown in Table 23.5.10.

Table 23.5.10 Calculation of Required Number of Berths

	Item		Unit	Calculation	Container Cargo
a	Number of Containers		'000 TEUs		300
b	Average Cargo Volume Handled		TEUs/vessel		450
c	Number of Vessel Calls		Calls/year	a/b	667
d	Cargo Handling Productivity		TEUs/hour/vessel	35TEU/hx2Gx0.7	49
e	Total Berthing Hours		Hours/year	(b/d +4)x c	8,794
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	2			52.8

Three (3) berths are planned in order to cope with future demand in the Cat Lai IZ Port.

2) Hiep Phuoc Container Port

Planned mooring facilities are shown in Table 23.5.11.

Table 23.5.11 Mooring Facilities at Hiep Phuoc Container Port

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	200	-11	20,000	Container

The required number of container cargo berths is calculated based on the procedures as shown in Table 23.5.12.

Table 23.5.12 Calculation of Required Number of Berths

	Item		Unit	Calculation	Container Cargo
a	Number of Containers		'000 TEUs		110
b	Average Cargo Volume Handled		TEUs/vessel		450
c	Number of Vessel Calls		Calls/year	a/b	244
d	Cargo Handling Productivity		TEUs/hour/vessel	35TEU/hx2Gx0.7	49
e	Total Berthing Hours		Hours/year	(b/d +4)x c	3,217
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	1			38.7

One (1) berths are planned in order to cope with future demand in the Hiep Phuoc Container Port.

3) Lower Cai Mep Container Port (LCC)
Planned mooring facilities are shown in Table 23.5.13.

Table 23.5.13 Mooring Facilities at LCC

Planned Berth	Length (m)	Depth (m)	Objective Vessel (DWT)	Cargo Type
No.1	300	-14	50,000	Container
No.2	300	-14	50,000	Container
No.3	300	-14	50,000	Container
No.4	300	-14	50,000	Container

The required number of container cargo berths is calculated based on the procedures as shown in Table 23.5.14.

Table 23.5.14 Calculation of Required Number of Cargo Berths

	Item		Unit	Calculation	Container Cargo
a	Number of Containers		'000 TEUs		1,100
b	Average Cargo Volume Handled		TEUs/vessel		1,500
c	Number of Vessel Calls		Calls/year	a/b	733
d	Cargo Handling Productivity		TEUs/hour/vessel	37TEU/hx2.5Gx0.7	65
e	Total Berthing Hours		Hours/year	(b/d +4)x c	19,847
f	Available Hours for Using Berths		Hours/year	(24x365x0.95)hrs	8,322
g	Berth Occupancy		%	e/(f x B)	
	B (Number of Berths):	4			59.6

Four (4) berths are planned in order to cope with future demand in the Lower Cai Mep Container Terminal.

23.5.3 Storage Facilities

(1) General Cargo Terminal

The size of cargo handling and storage facilities including the storage yard, transit shed and warehouse have to be decided in consideration of the types, quantities of cargoes and the conditions of handling.

1) Transit shed
The required area of the transit sheds is determined by the following formula:

$$A = (N \times p) / (R \times a \times W) / B$$

Where:

A	:	Required area of transit shed (m^2)
N	:	Annual volume of cargoes handled (tons)
R	:	Turnover of transit shed
a	:	Utilization rate (=0.5)
W	:	Volume of cargoes per unit area ($tons/m^{2)}$
P	:	Peak ratio (=1.3)
B	:	Efficiency storage rate (=0.75)

Based on the above, the required area of the transit shed is as follows:

A = 8,000 m^2 for 50,000 DWT Berth

2) Open storage yard
The required area for the open storage yard is determined by the following formula:

$$A = (N \times p) / (R \times a \times W) / B$$

Where:

A	:	Required area of open storage yards (m^2)
N	:	Annual volume of cargoes handled (tons)
R	:	Turnover of open storage
a	:	Utilization rate (=0.5)
W	:	Volume of cargoes per unit area ($tons/m^{2)}$
P	:	Peak ratio (=1.3)
B	:	Efficiency storage rate (0.75)

Therefore, the required area of the open storage yard is as follows:

A = 58,000 m^2 for 50,000 DWT Berth

(2) Container Cargo Terminal

1)) Container Yard

The required storage number of containers is calculated by the following formula:

$M_l = (M_y \times D_w / D_y) \times P$

Where:

M_l	:	Required storage number of containers (TEUs)
M_y	:	Annual container throughput (TEUs)
D_w	:	Average dwelling days (days)
D_y	:	Operation days (days)
P	:	Peak ratio (=1.3)

Required number of ground slots

$S_l = M_l / L$

Where:

S_l	:	Required number of ground slots (TEUs)
M_l	:	Required storage number of containers (TEUs)
L	:	Stacking height of containers (Layers)

The results of the calculation are shown in Table 23.5.15.

Table 23.5.15 Required Storage Capacity in Container Yard

Item	Unit	50,000 DWT Berth
Annual Container Throughput (My)	'000TEUs	370
(My x Dw / Dy) x P	TEUs	8,300
Stacking Height	Layers	3
Required Number of Ground Slots	Slots	2,800

c) Container Freight Station (CFS)

The required area for the CFS is calculated based on the formula below:

$A = (M_c \times D_w \times P) / (w \times u \times D_y)$

Where:

A	:	Required floor area of CFS (m^2)
M_c	:	Annual handling volume of containerized cargo through CFS (tons)
D_w	:	Dwelling time at CFS (days)
P	:	Peak ratio (=1.3)
w	:	Volume of cargoes per unit area (tons/m^2)
u	:	Utilization rate of CFS floor (=0.5)

D_y : *Operation days of CFS (days)*

Considering less demand of LCL(Less Container Load) containers in future, the required area of the CFS is as follows:

$$A = 3{,}000 \text{ m}^2 \text{ for } 50{,}000 \text{ DWT Berth}$$

23.6 Port Development Projects up to the Target Year 2010

23.6.1 Ports in HCMC Area

(1) Re-development of the Ports along Saigon River

In accordance with the urban development master plan of Ho Chi Min City, all the major ports of Ho Chi Min City such as Tan Cang and VICT are planned to be relocated to the Cat Lai and/or Hiep Phuoc Area by the year 2020. The most serious traffic congestion in the city at present occurs in a certain area to the north of the Tan Thuan Bridge. Priority should be given to the relocation and redevelopment of the port facilities in this area. The ports located in the city center but with a limited capacity will handle the cargo destined directly to the city or within the city area. The relocation of EPZ and VICT is not easy not only because of the scale but also because the lands of these huge areas have been leased out to the foreign companies operating these IZ and the port on a long-term basis.

(2) Development of Cat Lai IZ Port

The cargo transported to and from the IZ and HCMC should be handled mainly in the Cat Lai and Heip Phuoc IZ Ports. The cargo coming from the other areas should be handled at a convenient port such as Phu My Port. Accordingly, it will be imperative to adjust the capacity of port facilities.

(3) Development of Heip Phuoc IZ Port

As for the large-scale development of the Hiep Phuoc IZ Port, the relocation of the Saigon Port group and the possibility of the large-scale development of the lower Soai Rap River Channel are the important factors. At present, it seems that the port development has progressed in line with the progress of the IZ. A container and general cargo port for 20,000 DWT vessels should be developed by the year 2010

The short cut of the bend in the channel in the upper Soai Rap would have a negative influence on the water depth. In other words, the water depth may become shallower in the front of the Hiep Phuoc Power Plant by shortcutting the bend in the upper stream. This matter should be examined very carefully in the case of channel development.

23.6.2 Ports in Thi Vai – Vung Tau Area

(1) Development of the Thi Vai International General Cargo Terminal

The Thi Vai International General Cargo Terminal supports the industrial activity of the immediate port hinterland. The vessels should navigate up to the Thi Vai more than 30 km partly through a winding section of the channel stretching from the tip of the Vung Tau Peninsula. This condition is not suitable for the navigation of container vessels which require quick operation. It is ,however, suitable for the requirement of general cargo vessels. General cargo ports for 50,000 DWT should be developed by the year 2010.

(2) Development of the Cai Mep International Container Terminal

The size of the container vessel has been increasing throughout the world. This necessitates the development of a deep port as quickly as possible in Vietnam. The container port should be operated continuously 24 hours a day. In other words, the operation of such a port should not depend on the tidal level. It is quite important for the economic development of Vietnam to secure the direct transport of container but not to remain dependent on container transport by feeder operation. As the site of the Cai Mep is close to the site of the Phu My IZ, it is possible to manage these two terminals comprehensively. Container terminals for 50,000 DWT vessels should be developed by the year 2010.

(3) Development of the Vung Tau Area

The Ben Dinh-Sao Mai site is considered as an available site for the transshipment operation of the container cargoes. However, this place is rich in fishery and tourism resources. The development of this site or area should be carefully examined from various viewpoints and on a long-term basis. It is to be noted that there is a certain limitation of the available area for IZ just behind the port area. Dong Xuyen Port should be developed by the year 2010.

Table 23.6.1(1) Number of Future Container Berths

Container Berths	Vessel Size	2010	2020	Total
Tan Cang Cat Lai	20,000 DWT	2	0	2
Cat Lai Container	20,000 DWT	2	0	2
Hiep Phuoc Container	20,000 DWT	1	2	3
Upper Cai Mep	50,000 DWT	0	2	2
Lower Cai Mep	50,000 DWT	4	0	4
Lower Cai Mep	80,000 DWT	0	2	2
Total		9	6	15

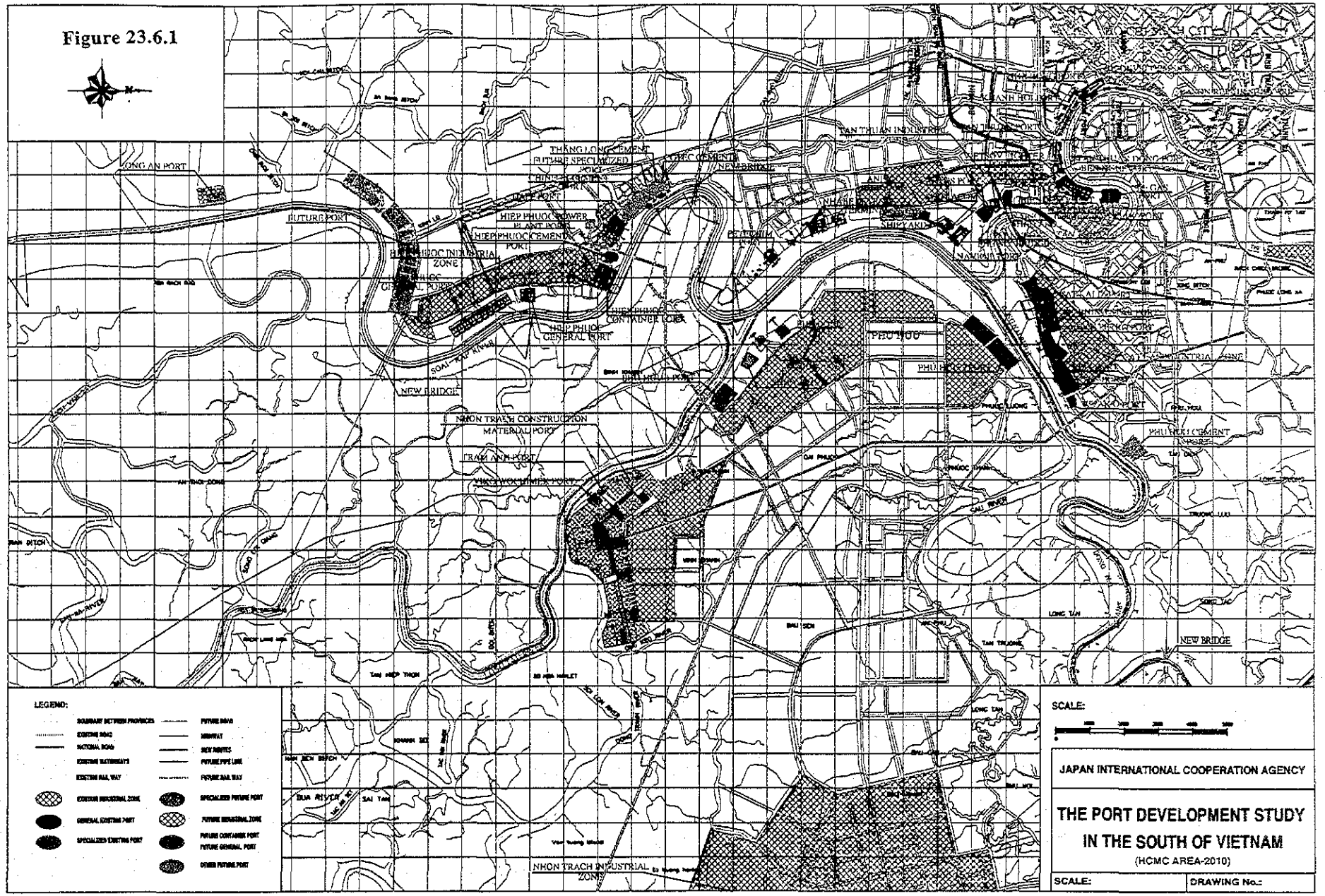
Table 23.6.1(2) Number of Future General Cargo Berths

General Cargo Berths	Vessel Size	2010	2020	Total
Cat Lai	20,000 DWT	1	0	1
Hiep Phuoc Container	20,000 DWT	1	1	2
Hiep Phuoc General	20,000 DWT	0	10	10
Thi Vai General	50,000 DWT	2	4	6
Dong Xuyen IP	20,000 DWT	1	0	1
Total		5	15	20

Table 23.6.1(3) Number of Future Passenger Berths

PassengerBberths	Vessel Size	2010	2020	Total
Sai Gon	50,000 GRT	0	1	1

Figure 23.6.1


LONG AN PORT
FUTURE PORT
THANG LONG CEMENT FUTURE SPECIALIZED PORT
HIEP PHUOC POWER PLANT PORT
HIEP PHUOC CEMENT PORT
HIEP PHUOC INDUSTRIAL ZONE
HIEP PHUOC CONTAINER PORT
HIEP PHUOC GENERAL PORT
NEW BRIDGE
NHON TRACH CONSTRUCTION MATERIAL PORT
TRAM ANH PORT
PHU HUU
PHU HUU CEMENT PORT
NEW BRIDGE
NHON TRACH INDUSTRIAL ZONE
LEGEND:
SCALE:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY IN THE SOUTH OF VIETNAM
(HCMC AREA-2010)
SCALE:
DRAWING No.:

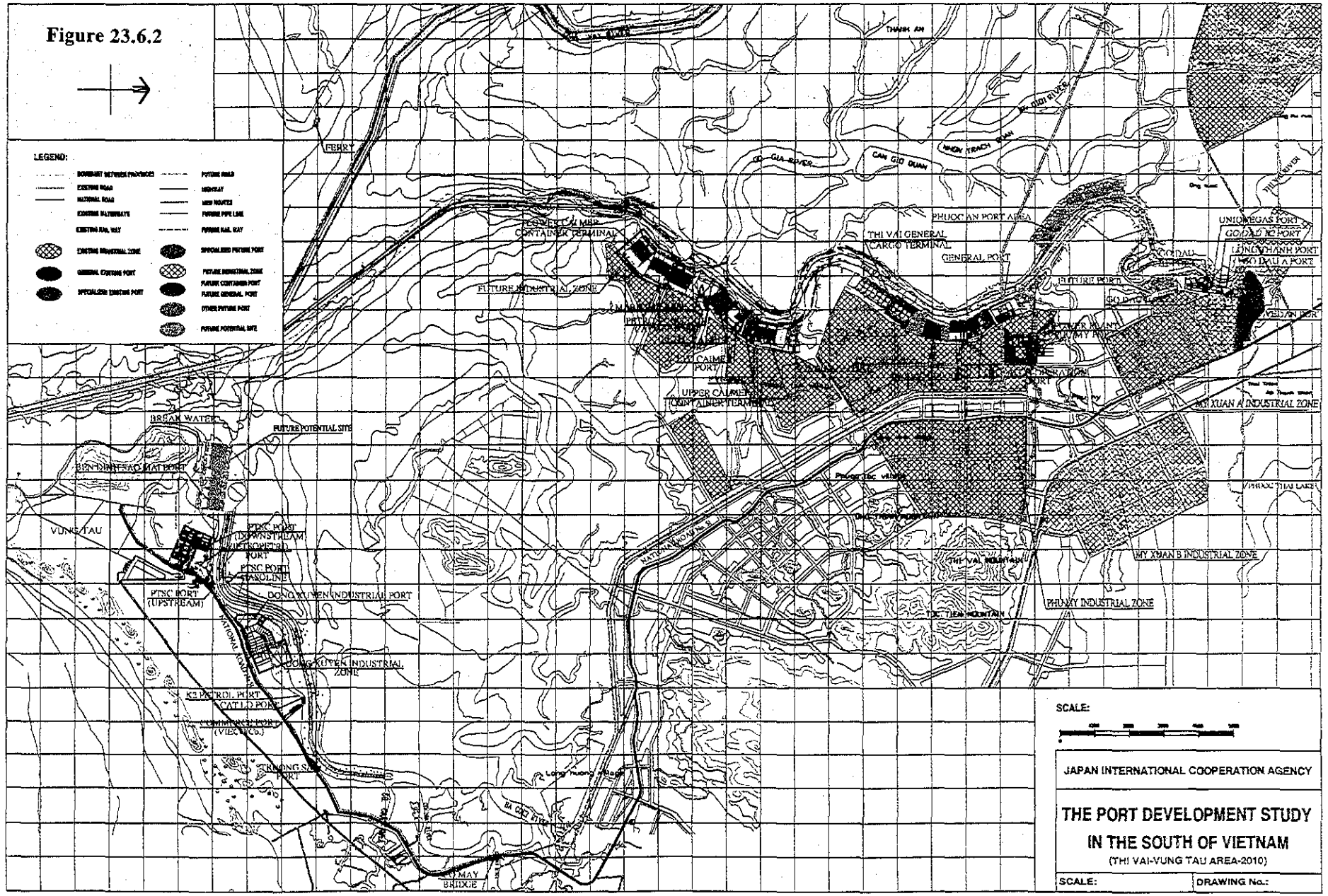


Figure 23.6.2
LEGEND:
FERRY
PHUOC AN PORT AREA
THI VAI GENERAL CARGO TERMINAL
GENERAL PORT
FUTURE PORT
FUTURE INDUSTRIAL ZONE
UPPER CAIMEP CONTAINER TERMINAL
FUTURE POTENTIAL SITE
VUNG TAU
PTSC PORT (DOWNSTREAM)
PTSC PORT (UPSTREAM)
DONG XUYEN INDUSTRIAL PORT
DONG XUYEN INDUSTRIAL ZONE
MAY BRIDGE
MY XUAN A INDUSTRIAL ZONE
MY XUAN B INDUSTRIAL ZONE
PHU MY INDUSTRIAL ZONE
THI VAI MOUNTAIN
TOC TIEN MOUNTAIN
SCALE:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY IN THE SOUTH OF VIETNAM
(THI VAI-VUNG TAU AREA-2010)
SCALE:
DRAWING No.:

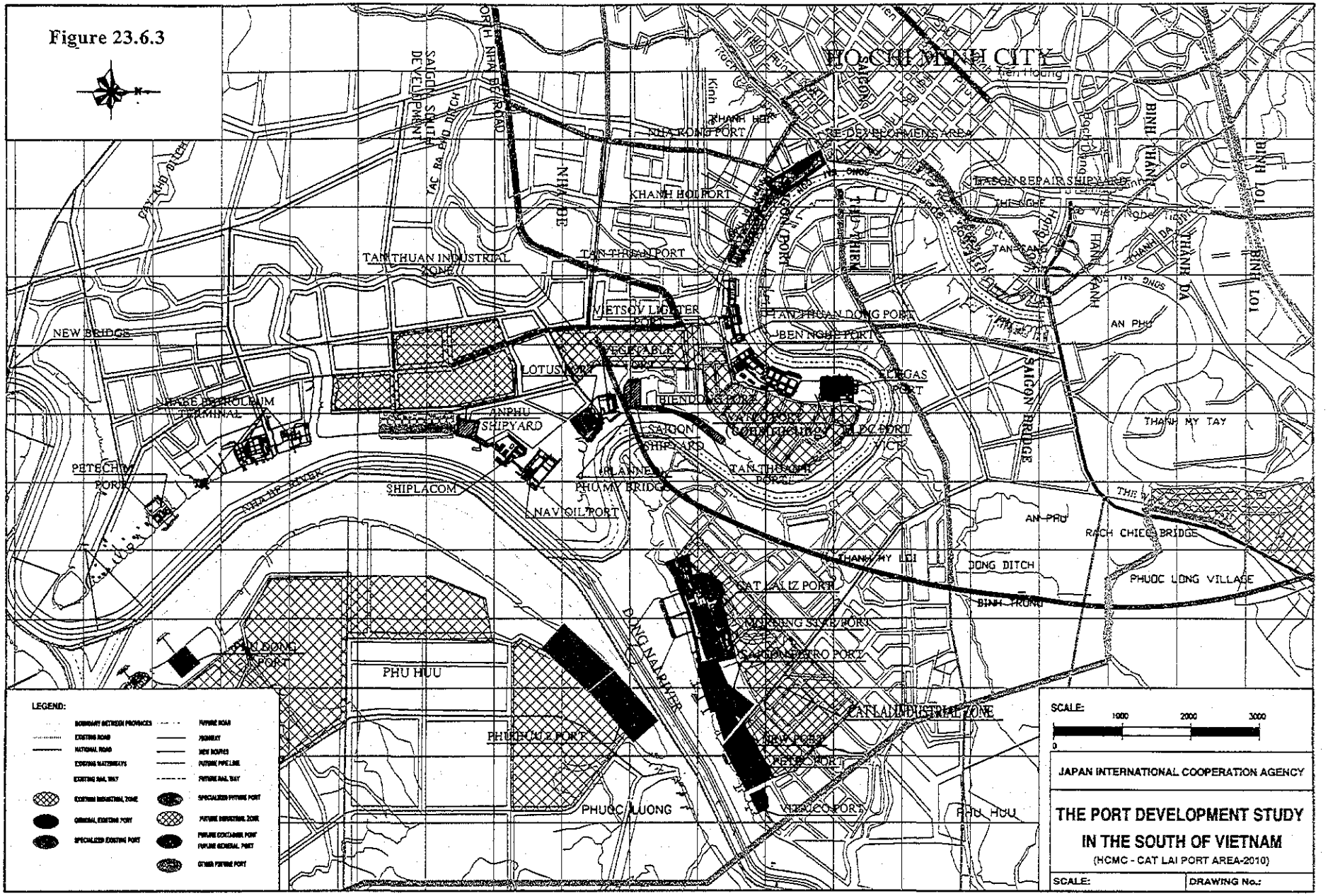


Figure 23.6.3
HO CHI MINH CITY
NHA RONG PORT
KHANH HOI PORT
TAN THUAN INDUSTRIAL ZONE
TAN THUAN PORT
VIETSOV LIGHTER PORT
NEW BRIDGE
LOTUS PORT
VEGETABLE PORT
HIEN DOC PORT
PETEC HCM PORT
ANPHU SHIPYARD
SAIGON SHIPYARD
SHIPLACOM
NAV OIL PORT
PHU MY BRIDGE
TAN THUAN PORT
PETEC HCM PORT
PHU DONG PORT
PHU HUU
PHUOC LUONG
CAT LAI INDUSTRIAL ZONE
CAT LAI PORT
MORESING STAR PORT
SAIGON PETRO PORT
VITACO PORT
PHU HUU
BINH LOI
THANH DA
AN PHU
THANH MY TAY
AN PHU
RACH CHIEC BRIDGE
THANH MY LOI
DONG DITCH
PHUOC LONG VILLAGE
BINH TRUNG
LEGEND:
SCALE:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY IN THE SOUTH OF VIETNAM
(HCMC - CAT LAI PORT AREA-2010)
SCALE:
DRAWING No.:

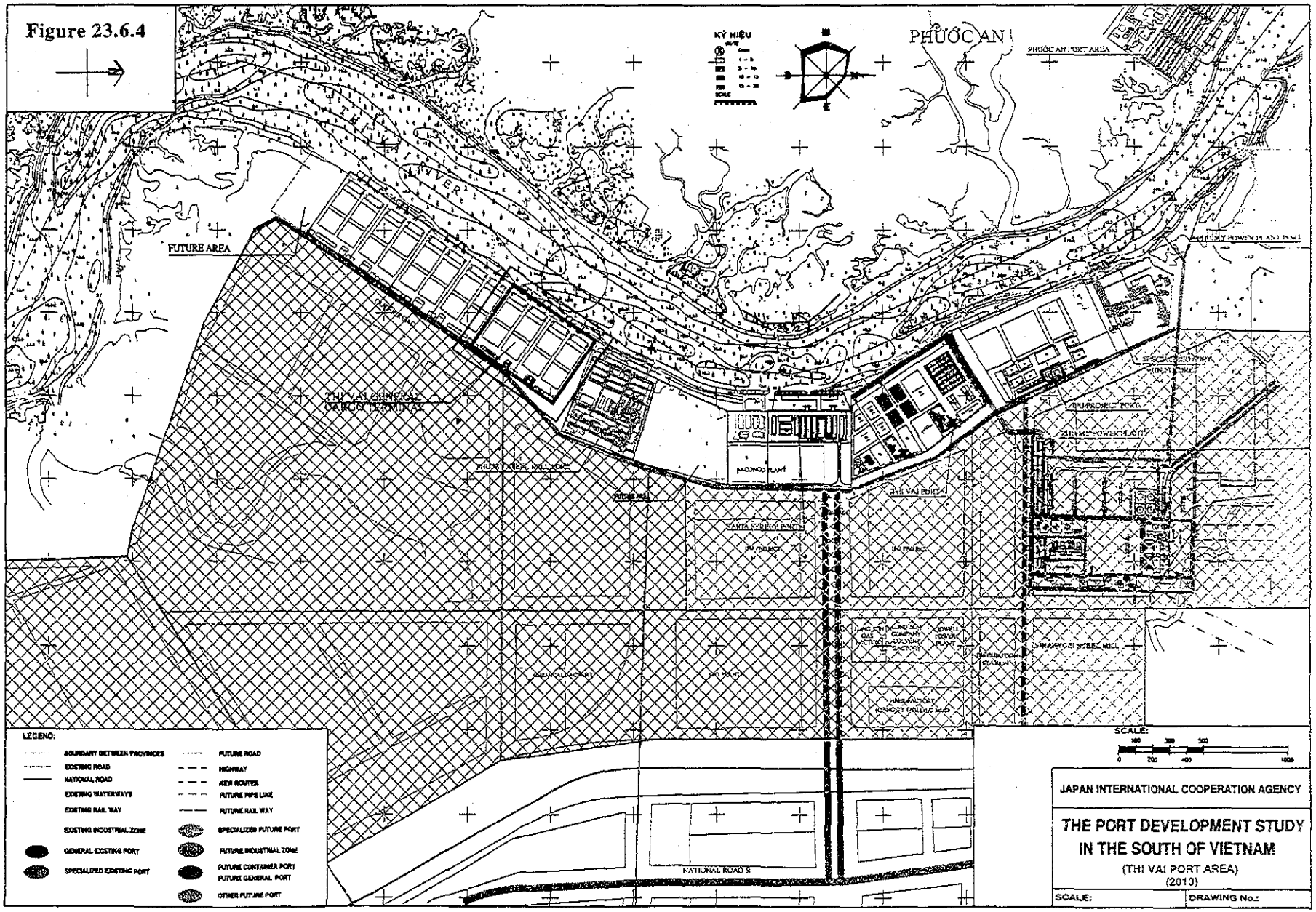


Figure 23.6.4
PHUOC AN
PHUOC AN PORT AREA
FUTURE AREA
NATIONAL ROAD 51
LEGEND:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY
IN THE SOUTH OF VIETNAM
(THI VAI PORT AREA)
(2010)
SCALE:
DRAWING No.:

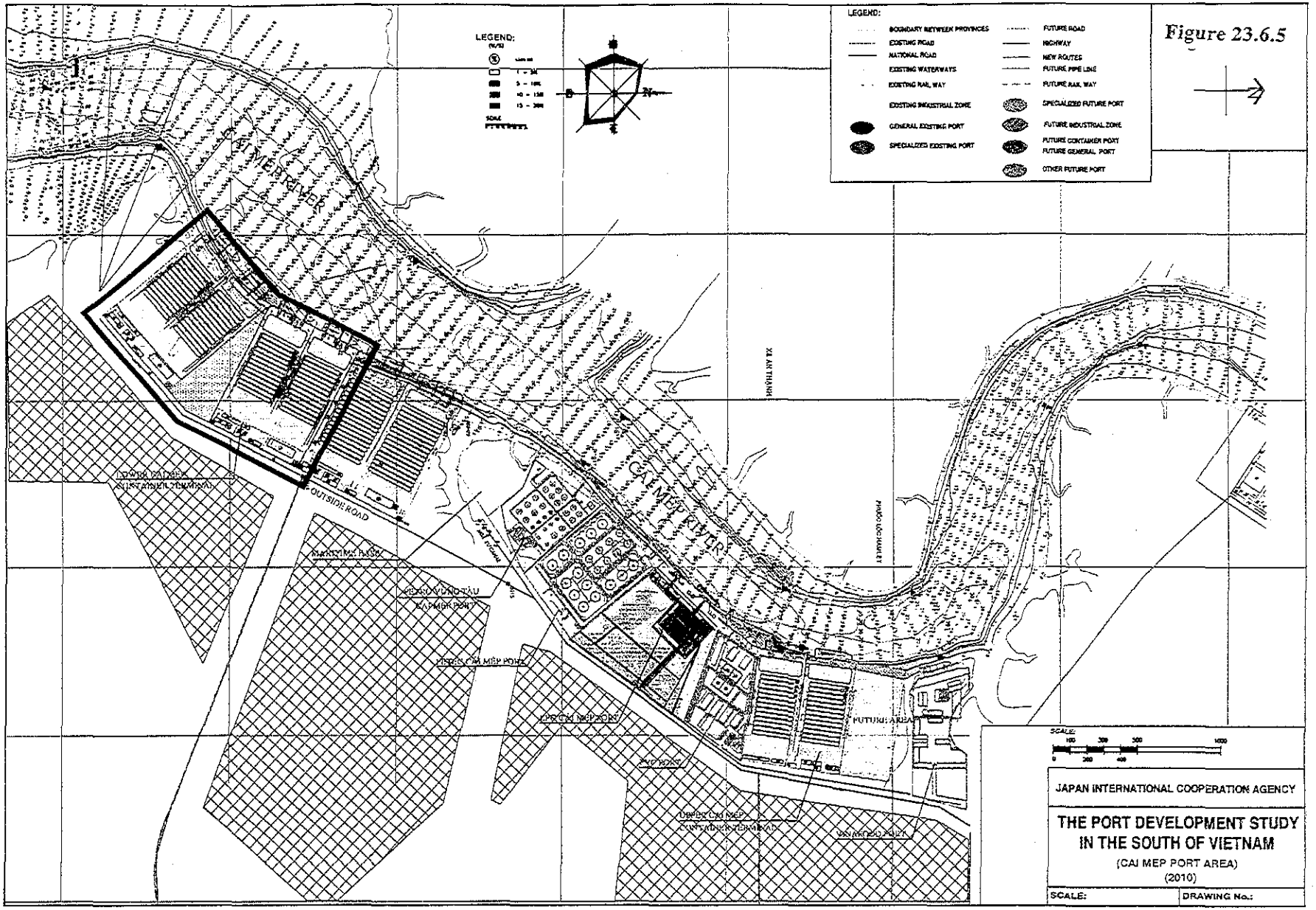
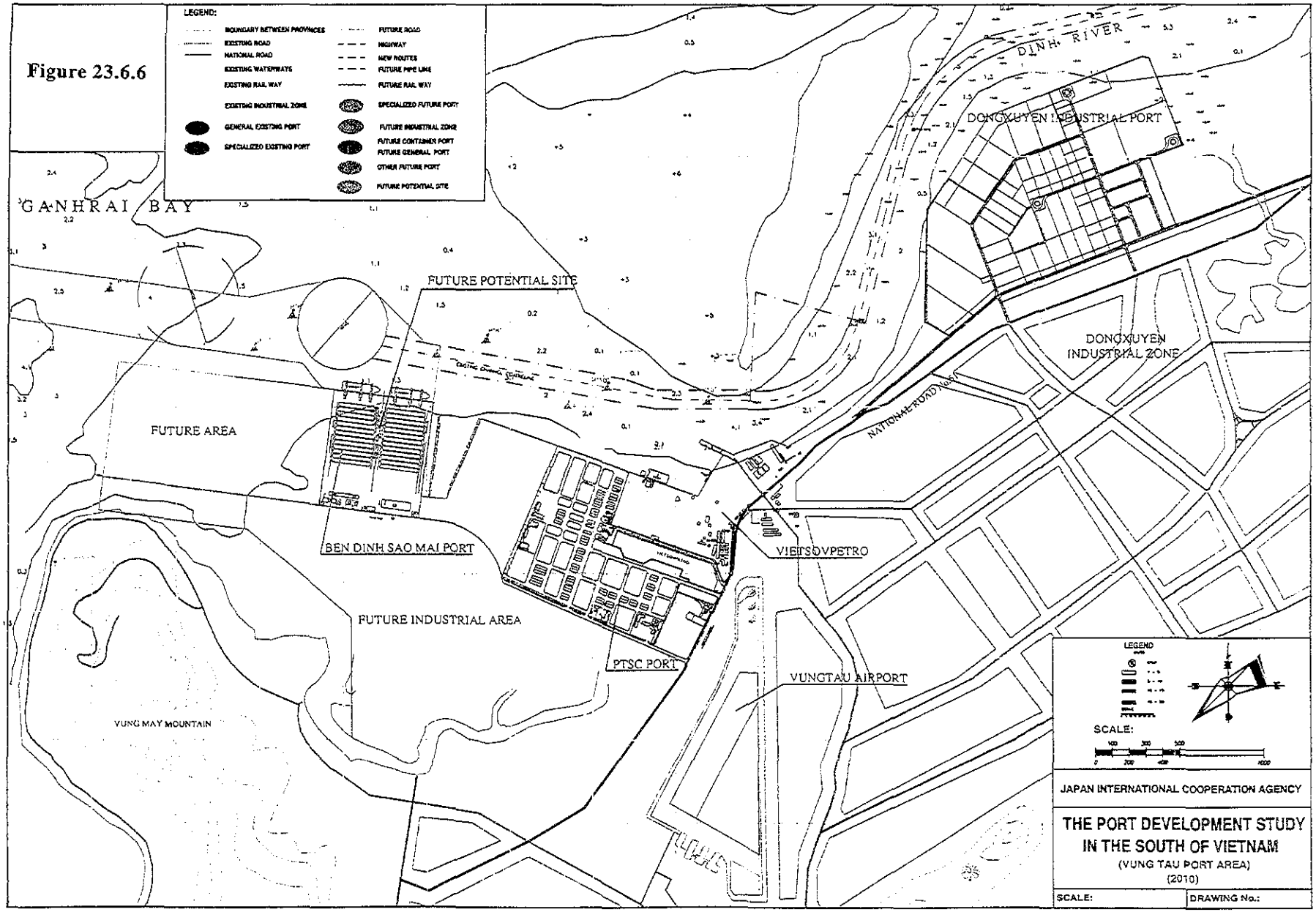

LEGEND:
BOUNDARY BETWEEN PROVINCES
EXISTING ROAD
NATIONAL ROAD
EXISTING WATERWAYS
EXISTING RAIL WAY
EXISTING INDUSTRIAL ZONE
GENERAL EXISTING PORT
SPECIALIZED EXISTING PORT
FUTURE ROAD
HIGHWAY
NEW ROUTES
FUTURE PIPE LINE
FUTURE RAIL WAY
SPECIALIZED FUTURE PORT
FUTURE INDUSTRIAL ZONE
FUTURE CONTAINER PORT
FUTURE GENERAL PORT
OTHER FUTURE PORT
CAI MEP RIVER
OUTSIDE ROAD
PHUOC LOC HAMLET
FUTURE AREA
SCALE:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY
IN THE SOUTH OF VIETNAM
(CAI MEP PORT AREA)
(2010)
SCALE:
DRAWING No.:

Figure 23.6.5

Figure 23.6.6


LEGEND:
BOUNDARY BETWEEN PROVINCES
EXISTING ROAD
NATIONAL ROAD
EXISTING WATERWAYS
EXISTING RAIL WAY
EXISTING INDUSTRIAL ZONE
GENERAL EXISTING PORT
SPECIALIZED EXISTING PORT
FUTURE ROAD
HIGHWAY
NEW ROUTES
FUTURE PIPE LINE
FUTURE RAIL WAY
SPECIALIZED FUTURE PORT
FUTURE INDUSTRIAL ZONE
FUTURE CONTAINER PORT
FUTURE GENERAL PORT
OTHER FUTURE PORT
FUTURE POTENTIAL SITE
GANHRAI BAY
DINH RIVER
DONGXUYEN I INDUSTRIAL PORT
DONGXUYEN INDUSTRIAL ZONE
FUTURE POTENTIAL SITE
FUTURE AREA
NATIONAL ROAD No.51
BEN DINH SAO MAI PORT
VIETSOVPETRO
FUTURE INDUSTRIAL AREA
PTSC PORT
VUNGTAU AIRPORT
VUNG MAY MOUNTAIN
LEGEND
SCALE:
JAPAN INTERNATIONAL COOPERATION AGENCY
THE PORT DEVELOPMENT STUDY
IN THE SOUTH OF VIETNAM
(VUNG TAU PORT AREA)
(2010)
SCALE:
DRAWING No.:

Chapter 24 Port Administration and Management Program for Year 2010

24.1 Improvement of Port Administration and Management System for Year 2010

(1) Further Improvement of Port Administration System

Concerning the port administration for Major-port, it can be convinced that the unified port administration system conducted by MOT/VINAMARINE would be firmly established in 2010. And, there is no doubt that the good and close relation between the central government and PMB of Major-port would be maintained

In this sake, the Government should continuously and aggressively conduct the further improvement of port administration system. Especially, the formulation of policies/plans and the improvement of institutional framework are important subjects which are effective for further advancement of the port administration in Vietnam.

(2) Establishment of New PMB for the New Port

In order to carry out efficiently and effectively the port management and operation of the New Port located on both Thi Vai and Cai Mep area which correspond to the priority projects in the Short-term Port Development Plan, the New PMB for that should be established as soon as possible. Needless to say, this PMB will manage and operate both ports by one body as mentioned in Chapter 14.

Fundamentally, the organization form of this New PMB needs to be a form which consists of the same Port Authority system as the Master Plan. The management and operation of the New Port should be conducted under an organizational framework suitable for the typical new large container port in Vietnam.

On the other hand, concerning the existing PMB such as Ho Chi Minh City port group, the restructuring towards the new framework proposed in the Master Plan may need a long time and it may not realize by 2010, because of the complicated situation. However, the constant efforts towards their realization by 2010 are indispensable.

(3) Institutionalization for Formulating and Authorizing a Port Master Plan

By 2010, institutionalization for formulating and authorizing the Port Master Plan of each Major-port should be realized. Port Master Plan has to be composed with careful consideration on various relevant factors including potential expansion requirement, socio-economic activities in hinterland, natural conditions of areas in and around so on. Therefore, the Port Master Plan should be so comprehensive that planning procedure needs to be institutionalized in close cooperation with other organizations concerned. As for this procedure, it is a principle that PMB formulates the draft plan of its port and then the central government authorizes it.

Although Japanese system for port planning procedure is not always applicable to other countries, it may be useful to streamline a little this administrative procedure in order to introduce to Vietnam, as soon as possible. In this case, an alternative organization with similar function needs to be set up so that opinions from various parties could be fairly reflected in the Port Master Plan.

(4) Improvement of Port Statistics System

Port statistics fundamentally should cover all ports in Vietnam. And at least, by 2010, the port statistics system covering all general ports should be established completely. As described before, it is required to clarify at least the trend of cargo handling volume by lot and the origin/destination of each kind of commodity and cargo type, as well as number of calling vessels, number of passengers and situation of quay, basin and warehouse, etc. Table shows the example of questionnaire for port statistical survey.

Eor reference, the example of the annual statistics style concerning the seaborne cargo traffic in port statistics is shown in Table 24.1.1.

Table 24.1.1 Example of Annual Statistics concerning Seaborne Cargo Traffic

Port Name AAA				Unit	2001	2001/2000	Share	2000
Grand Total								
Container Cargo								
Number of Containers								
	Foreign Cargo		Total					
			Export					
			Import					
		Container Cargo	Total					
			Export					
			Import					
		Number of Containers	Total					
			Export					
			Import					
	Domestic Cargo		Total					
			Outgoing					
			Incoming					
		Container Cargo	Total					
			Outgoing					
			Incoming					
		Number of Containers	Total					
			Outgoing					
			Incoming					

And, if possible, port statistics should be edited having close relation with statistics system of land transportation, which is closely related to port activities, and also be compatible with international

standards. In that case, it will become very important to define the classification of individual cargo and to unify the survey period. These are indispensable matters also for adequately revising the subject items according to the change of times.

(5) Promotion of Port Sales and Marketing

The South and East China Sea area around Vietnam is one of the noteworthy areas where the maritime industry has highly developed. Several large Hub-Port such as Singapore, Kaohsuing, Shanghai and Hong Kong are located there. And now, within these area, the hot competition trying to attract ships and container cargoes among the ports exists. Port sales promotion and marketing activities are, therefore, most important for the future development. The new PMB should positively play the important role conducting these activities with following materials:

+ Port Brochure,
+ Promotion Video and CD,
+ Internet,
+ Promotion Seminar, etc.

24.2 Organization of New PMB

(1) Organization Chart of New PMB

As described above, the organization form of New PMB fundamentally needs to be a form which consists of the same port management system as the Master Plan. In that case, it is necessary to decide the section in each division by taking account of the content of the tasks and the amount of the tasks. In the examination about the organization of new PMB in the Short-term Port Development Plan, it is judged that some sections proposed in the organization chart of the Port Master Plan can be integrated as follows.

+ Integration of " Port Maintenance" and " Control & Inspection"
+ Integration of "Civil Engineering" and " Mechanical & Electrical"
+ Integration of " International Relation" and " International Business"

The organization chart of New PMB of the New Port in the Short-term Port Development Plan is proposed as shown in Figure 24.2.1.

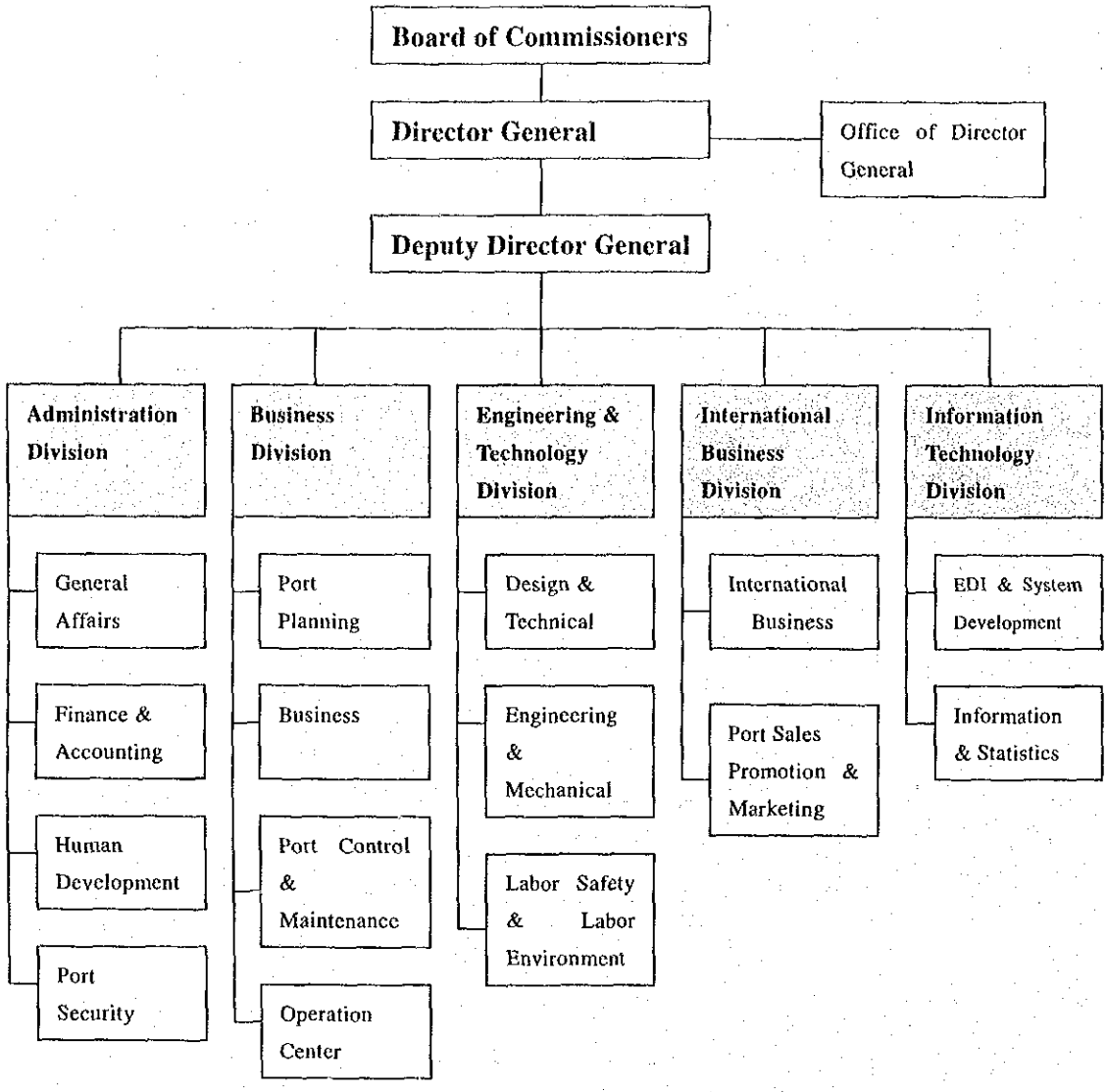


Figure 24.2.1 Organization Chart of PMB of the New Port

Moreover, from condition that the actual port service such as a stevedoring and a tugboat service shall be carried out by independent enterprises based on the contract, new PMB does not hold the departments, which will be in charge of these jobs, in its own.

(2) Scale of New Port Management Organization

Next, it is necessary to estimate the scale of new PMB, namely, the number of staffs of the PMB. Figure 24.2.2 shows a correlation between the number of staffs of PMB and the number of containers handling at some worlds' ports including Vietnamese ports. From this figure, it can be observed that the situation of the port management of Vietnam has a labor-intensive tendency compared with other worlds' ports.

On the other hand, the line shown in the same figure is one which approximates this correlation about other worlds' ports except Vietnamese ports by a straight line. By using this line, a scale of

the New Port's PMB can be estimated.

The amount of container cargoes to be handled in the New Port in 2010 is forecast as 1,100,000 TEUs. As a result, from Figure 24.2.2, it can be proposed that approximately 300 persons, as the organization scale of PMB of the New Port necessary for the management and operation, are suitable.

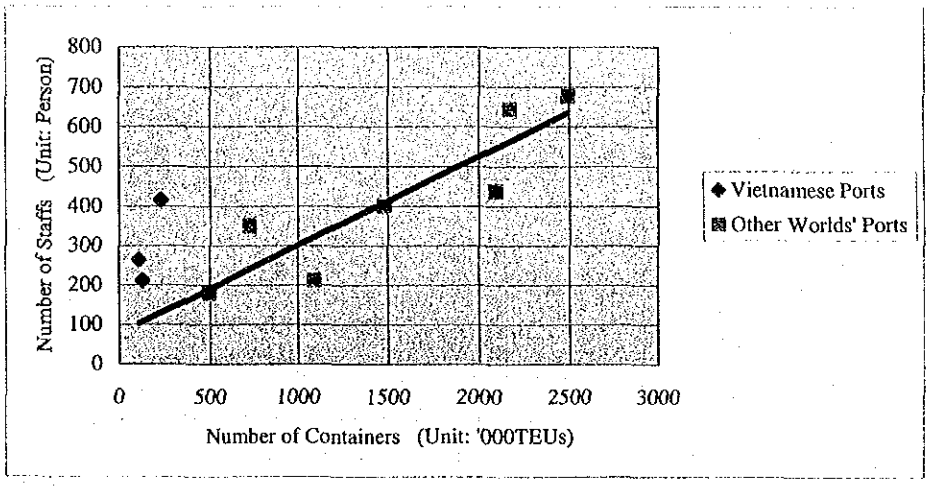


Figure 24.2.2 Correlation between Number of Staffs and Number of Containers

24.3 Promotion Program of PSP at New Port

(1) Determination of Appropriate PSP Type for Container Terminal of the New Port

It is forecast that container traffic at the New Port will keep increasing towards the future. Especially, Cai Mep Port is full-scale and deepwater container terminal of the first in Vietnam. In order to gain the maximum benefit from this social capital, the execution of efficient management and operation at this port will be earnestly required.

So, it is necessary to consider the following in determining an appropriate PSP type for this terminal.

+ The New Port is the most advanced international container port which typifies Vietnam. And, this port is also a harbor which has the serious influence for national interest.
+ A public sector always needs to supervise the development and management of the New Port so that this project would advance smoothly as planned.
+ Even in the case of PSP, land and basic infrastructures at the New Port should be owned by the public sector.
+ In order to transfer smoothly the know-how and techniques of a private sector to Vietnamese side, it is necessary to avoid an occurrence of the situation which leaves entirely the management and operation of the whole terminal to a private sector.
+ In the case that MOT/VINAMARINE provide infrastructure, it is necessary to secure sufficient funds. However, if they can obtain low interest foreign loans, its situation greatly will be improved.

Concerning the PSP type to be introduced at the New Port, it can be proposed that Type B shown in Figure 15.3.1, especially a Lease style, is the most suitable.

(2) Form of Container Terminal at the New Port

There are typical three types of terminal utilization, which are "Public use", "Commercial use" and "Private use". Features of these three types are shown in Table 24.3.1.

Table 24.3.1 Features of the Terminal Utilization Types

	Public Use	Commercial Use	Private Use
Ownership	Public	Public/Private	Private
Operation	Public/Private	Private	Private
Advantages	+ A "first come first served" policy can be maintained. + Risk for private sector is small.	+ High efficiency can be secured by unified operating. + It is possible to be used by many shipping companies. + It is possible to be developed under control of the private sector.	+ The private sector can adapt the most suitable mode of handling for a particular type of cargo. + Base cargo can be secured. + It is possible to be developed under control of the private sector.
Disadvantages	+ Efficiency of operation is low because of the inconsistent operation. .	+ There is a possibility of monopolization. + Operation is not viable unless it is profitable.	+ It is necessary to maintain a high cargo handling volume per one berth. + If the private sector evacuated, the damage would be very large.

Since the New Port is used not only by one shipping company, but also by plural shipping companies, on this terminal, high efficiency should be secured and public use should be kept. For efficient utilization of berths, Commercial use system should be adopted as a basic scheme. A large shipping company may request to use a terminal exclusively to maximize efficiency. And small shipping companies can also use the terminals. Therefore, the berth allocation system should be flexible. It can be recommended that the Commercial use system should be adopted on the container terminal of the New Port.

As it has mentioned above, suitable development/operation scheme concerning the container terminal of the New Port can be summarized as follows:

+ Public sector provides infrastructure and, if possible, also provides the quayside gantry crane while private sector provides superstructure. Terminal management and operation is conducted by private sector. Basic berth allocation is "Commercial use" system